

C.8 – LAND USE, RECREATION, AND WILDERNESS

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C.8.1 SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM) and Energy Commission staff (hereafter jointly referred to as “staff”) have reviewed the proposed Calico Solar Project (formerly the Stirling Energy Systems Solar One Project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). This section addresses land use issues related to agriculture and rangeland resources; wilderness and recreation resources; horses and burros; and compatibility with existing land uses and consistency with the applicable laws, ordinances, regulations, and standards (LORS).

Implementation of the proposed Calico Solar Project (Calico Solar or “proposed project”) would not result in adverse impacts to agricultural lands, rangeland resources, or horses and burros. The conversion of approximately 8,230 acres of land to support the proposed project’s components and activities could disrupt wilderness resources and recreational activities in established federal, state, and local recreation areas. Potential impacts from the proposed project would indirectly affect the Cady Mountains Wilderness Study Area (WSA); however, numerous wilderness and recreation areas surround the project site. Therefore, this indirect impact would not be adverse.

The applicant has submitted an application to the BLM requesting a right-of-way (ROW) to construct the proposed project and its related facilities. Pursuant to the California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan are considered through the Plan Amendment process. Therefore, the proposed project would require a BLM ROW grant and a project-specific plan amendment for consistency with the CDCA Plan. However, in an interim policy dated May 28, 2009, the State Director of the BLM issued an Instruction Memorandum regarding management of donated land and lands acquired by Land and Water Conservation Funds (LWCF), which requires LWCF lands to be managed as avoidance/exclusion areas for land use authorizations that could result in surface disturbing activities (BLM 2009a). Construction and operation of the proposed project would not comply with this policy.

For purposes of CEQA compliance, the level of significance of each impact of the proposed project on land use resources has been determined and is discussed in detail in Section C.8.4.3 (CEQA Level of Significance). In summary, impacts on agricultural lands and rangelands would be less than significant, and there would be no impacts related to Williamson Act contracts. Impacts to recreation and wilderness resources would be less than significant. Impacts to horses and burros would be less than significant. Impacts related to LORS compliance would be significant and unavoidable.

Under NEPA, impacts to land use, recreation and wilderness would be minimal. No Herd Management Area is affected by the proposed project.

Also included is the analysis of two project alternatives. The Reduced Acreage Alternative would be approximately 2,600 acres or 33 percent of the lands affected by the proposed project; and both the Reduced Acreage Alternative and the Avoidance of Donated and Acquired Lands Alternative would eliminate any construction on LWCF lands. In contrast to the proposed project, both of these alternatives would comply with all applicable LORS, in particular the BLM's Interim Policy Memorandum regarding management of donated LWCF mitigation lands. Otherwise, in general, the impacts associated with these alternatives would be similar to the proposed project, but proportionally less intense.

Because the Calico Solar Project would have no impacts on agricultural resources, rangelands, horses and burros, it would have no potential to contribute to cumulative impacts in this respect. However, the proposed project would combine with other past and reasonably foreseeable future projects to substantially reduce scenic values of wilderness areas and recreational resources in the Mojave Desert and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

C.8.2 INTRODUCTION

The land use analysis focuses on the project's consistency with environmental resources, land use plans, ordinances, regulations, policies, and the project's compatibility with existing or reasonably foreseeable land uses. In addition, an energy generating system and its related facilities generally have the potential to create impacts in the areas of air quality, noise, dust, public health, traffic and transportation, and visual resources. These individual resource areas are discussed in detail in separate sections of this document.

C.8.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of proposed project effects must comply with both CEQA and NEPA requirements given the respective power plant licensing and land jurisdictions of the California Energy Commission and U.S. Bureau of Land Management (BLM). CEQA requires that the significance of individual effects be determined by the Lead Agency; however, the use of specific significance criteria is not required by NEPA. Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws. CEQA requires a list of criteria that are used to determine the significance of identified impacts. A significant impact is defined by CEQA as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (State CEQA Guidelines Section 15382).

In comparison, NEPA states that "'Significantly' as used in NEPA requires considerations of both context and intensity..." (40 CFR 1508.27). Therefore, thresholds serve as a benchmark for determining if a project action will result in a significant adverse environmental impact when evaluated against the baseline. NEPA requires that an Environmental Impact Statement (EIS) is prepared when the proposed federal action

(project) as a whole has the potential to “significantly affect the quality of the human environment.”

Thresholds for determining significance in this section are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by the Energy Commission staff. In addition, staff’s evaluation of the environmental effects of the proposed project on land uses (i.e., those listed below) includes an assessment of the context and intensity of the impacts, as defined in the Council on Environmental Quality Regulations for implementing the Procedural Provisions of the NEPA (see regulations 40 CFR Part 1508.27). Effects of the proposed project on the land uses and the environment (and in compliance with both CEQA and NEPA) have been determined using the thresholds listed below.

Agricultural Lands and Rangeland Management

- Conversion of Farmland or Rangeland.
- Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- Conflict with existing zoning for agricultural use, or a Williamson Act contract.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural uses.

Wilderness, Areas of Critical Environmental Concern (ACEC) and Recreation

- Directly or indirectly disrupt activities in established federal, state, or local recreation areas and/or wilderness areas.
- Substantially reduce the scenic, biological, cultural, geologic, or other important factors that contribute to the value of federal, state, local, or private recreational facilities or wilderness areas.

Horses and Burros

- Involve changes in the existing environment which, due to their nature or location, result in interference with BLM’s management of Herd Management Areas (HMAs).

Land Use Compatibility and LORS Compliance

- Directly or indirectly divide an established community or disrupt an existing or recently approved land use.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project adopted for the purpose of avoiding or mitigating environmental effects.

Land Use Table 1 provides a general description of the land use LORS applicable to the proposed project. The proposed project’s consistency with these LORS is discussed in **Land Use Table 2**.

Land Use Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
Federal Land Policy and Management Act (FLPMA), 1976 – 43 CFR 1600	Establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the proposed project is that Title V, Section 501 establishes BLM's authority to grant rights-of-way for generation, transmission, and distribution of electrical energy (FLPMA 2001).
Bureau of Land Management - California Desert Conservation Area (CDCA) Plan, 1980 as Amended (BLM 1980)	<p>The 25 million-acre CDCA contains over 12 million acres of public lands spread within the area known as the California Desert, which includes the following three deserts: the Mojave, the Sonoran, and a small portion of the Great Basin. The 12 million acres of public lands administered by the BLM are half of the CDCA.</p> <p>The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and it is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each of the plan elements provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as a more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.</p>
Public Rangelands Improvement Act (1978) (PRIA 1978)	Establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; and continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values.

Applicable LORS	Description
Wild and Free-Roaming Horse and Burro Act (1971) (BLM 2009j)	The BLM protects, manages, and controls wild horses and burros under the authority of the Wild Free-Roaming Horses and Burros Act of 1971 (Act) to ensure that healthy herds thrive on healthy rangelands. The BLM manages these animals as part of its multiple-use mission under the 1976 Federal Land Policy and Management Act. One of the BLM's key responsibilities under the Act is to determine the "appropriate management level" (AML) of wild horses and burros on the public rangelands.
State	
None	
Local	
None	

Cumulative Land Use Effects

- Individual environmental effects, which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts.

C.8.4 PROPOSED PROJECT

C.8.4.1 SETTING AND EXISTING CONDITIONS

Proposed Project

The proposed Calico Solar site is approximately 8,230 acres and is located in San Bernardino County approximately 37 miles east of Barstow. The site consists primarily of public land administered by the BLM. Within the site boundaries are 2,246 acres of undeveloped private land under the jurisdiction of San Bernardino County; however, the private land would not be a part of the proposed project. This private land, as well as non-BLM lands within one mile of the project, is designated as Resource Conservation by county zoning. The southern boundary of the proposed project site is adjacent to Interstate Highway 40 (I-40), and the northern side of the project site borders the Cady Mountains.

The applicant submitted an updated project boundaries map dated August 12, 2009. Staff requested the applicant to submit a formal description of the new boundaries, which has not been provided. As such, the project boundaries described above are from the AFC, and will be revised upon receipt of an updated description.

The Calico Solar site primarily consists of undeveloped desert land. Existing onsite land uses include the Burlington Northern Santa Fe (BNSF) railroad right-of-way (ROW), which traverses the site from east to west; several underground high pressure gas

pipelines generally parallel to I-40 and the railroad; Hector Road which enters the site from I-40 and traverses it for approximately 0.5 mile; and Southern California Edison's (SCE) Pisgah Substation and overhead transmission line which are adjacent to the southeast border of the project site. In addition, approximately 775 acres on the northeast portion of the project site have been designated as Land and Water Conservation Fund mitigation lands (BLM 2009a).

The proposed project would occur in two phases. Phase I would consist of the construction of up to 11,000 SunCatchers and would require approximately 2,320 acres of BLM land. Phase II would expand the project to a total of 34,000 SunCatchers and would require approximately an additional 5,910 acres of BLM land. In addition to the proposed project site and construction areas, there are other features and facilities associated with the proposed project (the majority of which are located on the proposed project site or construction laydown areas), including:

- approximately 34,000, 38-foot solar dish Stirling systems (i.e., SunCatchers) and associated equipment and infrastructure within a fenced boundary;
- a 220-kV substation in the center of the project site;
- approximately one mile within the project site of twelve to fifteen 220-kV transmission line structures (90 to 110 feet tall) from the proposed Calico Solar Substation to SCE's Pisgah Substation;
- a Main Services Complex including an administration building (30,000 sq. ft.) and a maintenance building (45,000 sq. ft.);
- two 175,000-gallon water storage tanks (40 feet in diameter) and two 17,000-gallon water storage tanks (18 feet in diameter);
- main roads with a combination of roadway dips and elevated sections across drainage features;
- a buried septic tank system with a dual sanitary leach field;
- temporary access to the project site for construction-related vehicles to be provided off of I-40 east of the project site and east of the Pisgah Substation; and
- permanent access to the project site to be provided by a bridge over the BSNF railroad along Hector Road.

Surrounding Area

The surrounding area consists of undeveloped desert land and mountain terrain with small rural communities in the vicinity. The closest community is Newberry Springs located approximately 10 miles west of the project site, and the closest residence is located approximately 2 miles east of the project site. In addition, north of the BNSF railway is private land, which has been accessed by Hector Road where it crosses the BNSF railroad ROW. This includes the private properties in Section 1, Township 8 North, Range 5 East, and Section 36, Township 9 North, Range 5 East (Jackson 2009b). Since the summer of 2008, BNSF and Calico Solar entered into an Agreement for Private Crossing. Because this crossing is private, gates and barricades have been placed at this crossing to ensure public safety and prevent public use of this crossing (SES 2009x).

Agricultural Lands and Rangelands

The project site is located within the desert region of central San Bernardino County, which is not notable for productive agricultural land. The United States Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS) provides information on the designation of soils in areas with agricultural lands, including farmland classifications such as Prime Farmland and Farmland of Statewide Importance (NRCS 2009). However, data for the project site was not available through the NRCS's Web Soil Survey (WSS). Similarly, the California Department of Conservation's (DOC) Farmland Mapping and Monitoring Program (FMMP) provides designations and statistics on the conversion of farmland to non-agricultural uses throughout the State. However, the proposed project site is not within the survey boundaries of the FMMP. As such, no agricultural land is within the project boundaries.

Rangeland allotments are designated BLM pastures for wildlife and livestock (BLM 2009b). The majority of the proposed project is located within the Cady Mountains rangeland allotment. According to BLM's online GIS mapping program (Geocommunicator), the southwest boundary of this allotment follows the BNSF railroad. As such, approximately 6,400 acres of the project site that is north of the BNSF railroad is within the Cady Mountains rangeland allotment (BLM 2009c). There is currently no grazing permit issued within the proposed project area. In addition, the northern boundary of the Ord Mountain allotment is approximately 0.75 mile south of the project site.

Wilderness and Recreation

Wilderness land in San Bernardino County is administered by the BLM. According to the federal Wilderness Act, a designated Wilderness Area is defined as having four primary characteristics, including the following:

- a natural and undisturbed landscape;
- extensive opportunities for solitude and unconfined recreation;
- at least 5,000 contiguous acres; and
- feature(s) of scientific, educational, scenic, and/or historic value (US Code 2009).

As noted in the AFC, adjacent to the northern boundary of the project site is the Cady Mountains Wilderness Study Area (WSA). This is an area designated and managed by the BLM, where limited recreational activities are permitted including camping and off-road vehicle use (SES 2008a). Each WSA has been documented by wilderness study reports that show the location of the individual WSAs, a description of its wilderness values, and BLM's recommendation for its future suitability as wilderness as proposed by the Secretary of Interior on June 12, 1991 (BLM 2009c). In addition, as noted above, the northwest border of the Pisgah ACEC is adjacent to the southeast boundary of the proposed project site along the SCE transmission line ROW. The Pisgah ACEC contains the Pisgah Crater and lava flow, and supports several sensitive species. While no direct impacts would occur to this ACEC, indirect impacts may occur. The Ord-Rodman Desert Wildlife Management Area (DWMA) is located adjacent to the southwest portion of the project site. This DWMA, which includes federally designated critical habitat for the desert tortoise, was established by the Western Mojave Plan.

Public lands within DWMA are designated as ACECs. While no direct project impacts would occur to this DWMA, indirect impacts may occur to this ACEC.

The wilderness areas in the vicinity of the proposed project site are the Rodman Mountains Wilderness located approximately 8 miles southwest of the project site, the Bristol Mountains Wilderness and Kelso Dunes Wilderness located approximately 10 miles east of the project site, and the Newberry Mountains Wilderness located approximately 15 miles southwest of the project site. The Rodman Mountains Wilderness are approximately 34,320 acres where a series of ridges and valleys climbing from 2,000 feet to almost 5,000 feet are the result of faults which cross this wilderness (BLM 2009e). Camping, hunting, fishing, and horseback riding are allowed in the Rodman Mountains Wilderness. The Bristol Mountains Wilderness is approximately 71,385 acres and the adjacent Kelso Dunes Wilderness is approximately 144,915 acres. This area provides ample space for recreation activities including hiking, horseback riding, hunting, camping, rockhounding, and photography (BLM 2009f, 2009g). The Newberry Mountains Wilderness is approximately 26,102 acres and are noted for rugged volcanic mountains and deep, maze-like canyons, where camping, hunting, fishing, and horseback riding are allowed (BLM 2009h).

Approximately 32 miles east of the project site is the Mojave National Preserve which is a 1.6-million acre park managed by the U.S. National Park Service (NPS 2009). Within the Mojave National Preserve is the Providence State Recreation Area (SRA) which is managed by California State Parks. This area also provides space for recreational activities; in particular, nature hikes and cavern tours are the main attractions of this park.

As noted above, various recreational activities occur throughout the wilderness areas surrounding the project site. In addition, the Cady Mountains and Pisgah Crater are known destinations for rockhounding. The Cady Mountains are characterized by agate, chalcedony, geodes, and jasper, and the Pisgah Crater is characterized by lava and volcanic bombs (BLM 2009i). Off-highway vehicle recreational use is also a recreational activity within the boundaries of the project site. In general, off-highway vehicles are limited to designated routes of travel in Limited use areas. OHV use is also allowed in designated Open OHV Areas. The Razor Off-Highway Vehicle Area is a 22,500-acre state designated area for off-highway vehicle use located adjacent to and west of the Mojave National Preserve. There are no designated open OHV use areas within the project site.

Horses and Burros

The BLM administers wild horses and burros as guided by the Wild and Free-Roaming Horse and Burro Act of 1971. This includes the management of Herd Areas (HA) and Herd Management Areas (HMAs), which are geographic areas where wild horse or burro populations were found at the passage of the Act in 1971 (BLM 2009j). California contains 33 HAs and 22 HMAs. According to BLM maps, the Granite-Providence Mountains is the closest HA located approximately 32 miles east of the project site within the Mojave Preserve. In addition, the Cima Dome, Lava Beds, and Woods-Hackberry HAs are located within the Mojave Preserve approximately 40 to 45 miles east of the proposed project site (BLM 2009k). No HMAs are within the vicinity of the

project site. As such, the proposed project would not traverse any established HMAs or HAs.

Land Use and LORS Compliance

The majority of the proposed project site is located within the “Moderate” (Class M) use category of the BLM’s CDCA Plan, with some areas designated as “Limited” (Class L) (SES 2008a). Multiple Use Class M (Moderate Use) is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy and utility development. Class M management is also designed to conserve desert resources and mitigate damage to those resources which permitted uses may cause. Multiple Use Class L (Limited Use) protects sensitive, natural, scenic, ecological and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-intensity, carefully controlled multiple use resources, while ensuring that sensitive values are not significantly diminished (CDCA Plan, 1999 reprint). In addition, approximately 2,246 acres of the private lands under San Bernardino County jurisdiction surrounded by the proposed project site, but are not a part of the proposed project. Thus, there are no lands within the project site that are under local jurisdiction.

C.8.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Construction and Operation

Agricultural Lands and Rangelands

As described in detail above under the section entitled **Agricultural Lands**, multiple governmental agencies at the federal, state, and local level have information regarding the agricultural lands relating to the proposed project and the surrounding area. To summarize, the following is a list of the various designations or categorizations these multiple governmental agencies have provided for the proposed project site and construction laydown area:

- **USDA NRCS:** The NRCS’s Web Soil Survey does not have data for the project site, and therefore does not provide a farmland classification.
- **California DOC:** The project site is not with the survey boundaries of the FMMP mapping criteria.
- **San Bernardino County:** The private land adjacent to the project site is under the county’s jurisdiction, and is within the Resource Conservation zoning district.
- **Williamson Act:** The project site is not located in an area that is under a Williamson Act contract.

Based on the lack of federal, state or local farmland/agricultural designations, the proposed project would not convert important farmland, would not conflict with agricultural zoning designations or Williamson Act contracts, and would not result in a change in the existing environment that would lead to a conversion of farmland. Therefore, the proposed project would not adversely impact agricultural land.

However, as noted in the “Setting and Existing Conditions,” the project would be located within the Cady Mountains grazing allotment. This allotment consists of 177,293 acres which is designated by BLM as available for grazing livestock (BLM 2009l, BLM 2009m). According to the West Mojave Plan, the allotment was identified as an area that would benefit from voluntary relinquishment. Therefore, grazing is not currently authorized on this allotment. The proposed project would convert approximately 6,400 acres of the Cady Mountains rangeland allotment to another use, which accounts for approximately three percent of the allotment. Therefore, the proposed project is not expected to result in an adverse impact to inactive livestock grazing. For discussion of impacts to the desert bighorn sheep, please see the **Biological Resources** section of this document.

Wilderness and Recreation

Recreational activities, including camping and off-road vehicle use, are permitted in the Cady Mountains WSA located just north of the project site. In addition, the project would be approximately eight miles north of the closest wilderness area (the Rodman Mountains). As such, the proposed project would not directly disrupt wilderness or recreation activities. However, the proposed project could indirectly impact the recreational and wilderness values of the Cady Mountains WSA by changing the natural and undisturbed landscape; and construction and operation activities would have the potential to degrade the qualities of solitude and unconfined wilderness and recreation in this remote area of the Mojave Desert. The CDCA Plan amendment associated with the proposed project would not affect the wilderness characteristic values of the WSA since the proposed project site is not located within the WSA area. Nonetheless, as described in the “Setting and Existing Conditions,” numerous wilderness and recreation areas are in the vicinity of the project site, which provide alternative options for recreation and wilderness destinations. Therefore, potential indirect impacts from the proposed project would not be adverse from a land use perspective. Please refer to the **Biological Resources**, **Cultural Resources**, and **Visual Resources** sections for detailed discussions of proposed project effects on scenic, biologic, and cultural amenities.

Horses and Burros

The proposed project would not contain or traverse any established BLM HAs or HMAs. As discussed in the “Setting and Existing Conditions,” the Granite-Providence HA is the closest HA, which is located approximately 32 miles east side of the proposed project site. Therefore, the proposed project would not result in an interference with BLM’s management of an HMA or HA. For a discussion of the proposed project’s consistency with Chapter 3 of the BLM’s CDCA Plan, Wild Horses and Burros Element, please see **Land Use Table 2** (below). Please refer to the **Biological Resources** section.

Land Use Compatibility and LORS Compliance

Physical Division of an Existing Community

The proposed project site is located on undeveloped lands under the jurisdiction of the BLM, which is not located within or near an established community. Therefore, neither the size nor the nature of the project would result in a physical division or disruption of an established community. In addition, due to the temporary nature of construction

activities, construction generated nuisances such as dust and noise are not expected to adversely affect existing land uses in the area. For a detailed analysis of construction-related nuisance impacts, please see the **Air Quality, Public Health, Traffic and Transportation**, and **Noise** sections of this document.

Conflict with any Applicable Land Use Plan, Policy, or Regulation

As required by California Code of Regulations, Title 20, Section 1744, Energy Commission staff evaluates the information provided by the project owner in the AFC (and any amendments), project design, site location, and operational components to determine if elements of the proposed project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority. As part of the licensing process, the Energy Commission must determine whether a proposed facility complies with all applicable state, regional, and local LORS (Public Resources Code section 25523[d][1]). The Energy Commission must either find that a project conforms to all applicable LORS or make specific findings that a project's approval is justified even where the project is not in conformity with all applicable LORS (Public Resources Code section 25525).

In addition, the applicant has submitted an application to the BLM requesting a ROW to construct the proposed project and its related facilities. Pursuant to the

California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan are considered through the Plan Amendment process. Under Federal law, BLM is responsible for processing requests for ROWs to authorize such proposed projects and associated transmission lines and other appurtenant facilities on land it manages. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan be considered through the Plan Amendment process. BLM would use the following Planning Criteria during the Plan Amendment process:

- The plan amendment process would be completed in compliance with the Federal Land Policy and Management Act (FLPMA), NEPA, and all other relevant Federal law, executive orders, and management policies of the BLM;
- The plan amendment process would include an EIS (i.e., this joint CEC Staff Assessment/BLM EIS) to comply with NEPA standards;
- Where existing planning decisions are still valid, those decisions may remain unchanged and be incorporated into the new plan amendment;
- The plan amendment would recognize valid existing rights;
- Native American Tribal consultations would be conducted in accordance with policy, and Tribal concerns would be given due consideration. The plan amendment process would include the consideration of any impacts on Indian trust assets (please see the **Cultural Resources** section);

- Consultation with the State Office of Historic Preservation (SHPO) would be conducted throughout the plan amendment process (please see the **Cultural Resources** section); and
- Consultation with the US Fish and Wildlife Service (USFWS) would be conducted throughout the plan amendment process (please see the **Biological Resources** section).

If the ROW and proposed land use plan amendment are approved by BLM, the proposed solar thermal power plant facility on public lands would be authorized in accordance with Title V of the FLMPA of 1976 and the Federal Regulations at 43 CFR part 2800. This Environmental Impact Statement (EIS) acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the site location within the Plan.

An additional LORS compliance issue was raised by the public during the scoping process for this document. According to some private landowners, the public and private landowners have been using Hector Road at the railway crossing to access the land north of the BNSF railway for over fifty years. This includes the private properties in Section 1, Township 8 North, Range 5 East, and Section 36, Township 9 North, Range 5 East (Jackson 2009b). However, according to these private landowners, recently-placed gates and barricades at the crossing have blocked access to these lands. Private landowners assert that Hector Road has been in use prior to the passage of the FLMPA, and therefore, is a county road, and blocking access is a violation of the Unlawful Enclosures of Public Lands Act of 1885 and the CDCA Plan, which classifies the project site as an “open area” (Jackson 2009a).

As the proposed project developer, Tessera Solar responded to the private landowners by explaining that due to additional safety requirements, BNSF requires gates to be installed at all crossings where an entity other than BNSF (i.e., the applicant) would have access (SES 2009x). The private crossing granted to Calico Solar/Tessera is for the purposes of establishing an access to the western side of the proposed project site. As such, in addition to installation of the gate and barricades, the applicant had to acquire insurance for potential damage to BNSF property and attend a safety course. Tessera complied with these conditions and was granted access, which established the need for gates and barricades (SES 2009x). In addition, at the December 22, 2009 Staff Workshop, BLM representatives stated that the crossing was established as a BNSF ROW for access to, and maintenance of, the rail line and, and therefore, the crossing is not a legal road with authorized access for the public (CEC 2009). As such, the crossing is a physical access and not a legal access, and has been used in a passive and unauthorized manner. Therefore, the recent blockage of this crossing does not result in a conflict with any applicable LORS. For a detailed discussion of impacts related to access and public safety, please refer to the **Traffic and Transportation** and **Public Health and Safety** sections (respectively) of this document.

Staff’s analysis of the proposed project’s (and project alternatives) consistency with applicable federal land use LORS is presented in **Land Use Table 2**. Note that there are no State or local land use LORS applicable to the proposed project. Based on staff’s independent review of applicable LORS documents, the proposed project would not be

consistent with certain applicable land use LORS; in particular the current BLM Interim Policy Memorandum regarding LWCF mitigation lands (see discussion in the table below). However, implementation of the Reduced Acreage Alternative or the Avoidance of Donated and Acquired Lands Alternative would avoid LWCF lands and would be consistent with the BLM Interim Policy (see Sections C.8.5 and C.8.6, below, for a discussion of these alternatives).

Land Use Table 2
Project Compliance with Adopted Land Use LORS

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
Federal			
Federal Land Policy and Management Act, 1976 – 43 CFR 1600, Sec. 501. [43 U.S.C. 1761]	(a) The Secretary, with respect to the public lands ... are authorized to grant, issue, or renew rights-of-way over, upon, under, or through such lands for: (4) systems for generation, transmission, and distribution of electric energy, except that the applicant shall also comply with all applicable requirements of the Federal Energy Regulatory Commission under the Federal Power Act, including part I thereof (41 Stat. 1063, 16 U.S.C. 791a-825r) [P.L. 102-486, 1992]	YES	The FLPMA authorizes the issuance of a right-of-way grant for electrical generation facilities and transmission lines. In addition, based on staff's review of the Federal Power Act, the requirements would not be applicable to the proposed project as they are not related to renewable resources, and are otherwise related to administrative procedures. Therefore, the proposed project would be in compliance with this policy.
Farmland Protection Policy Act, Section 658.1	As required by section 1541(b) of the [Farmland Protection Policy] Act, 7 U.S.C. 4202(b), Federal agencies are (a) to use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) to consider alternative actions, as appropriate, that could lessen adverse effects, and (c) to ensure that their programs, to the extent practicable, are compatible with State and units of local government and private programs and policies to protect farmland.	YES	As discussed above in detail in Section C.8.4.2 (under the subsection entitled "Agricultural Lands and Rangelands"), the farmland conversion impacts of the proposed project would not be adverse. In addition, construction of the proposed project and its onsite linear facilities would be temporary, and the project would not involve other changes in the existing environment that could result in conversion of farmland, to non-agricultural uses. Therefore, proposed project would be consistent with the FPPA.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
<p>Bureau of Land Management – California Desert Conservation Area (CDCA) Plan (BLM 1980)</p>	<p>Chapter 2 – Multiple-Use Classes MULTIPLE-USE CLASS GUIDELINES MULTIPLE-USE CLASS L (Limited Use) 6. Electrical Generation Facilities – Electric generation may be allowed. (See wind/solar/ geothermal, below) – Wind/Solar May be allowed after NEPA requirements are met. 7. Transmission Facilities – New gas, electric, and water facilities and cables for interstate communication may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met. [#5,85]</p>	<p>YES (with BLM's project-specific CDCA Plan Amendment)</p>	<p>The proposed project site is administered by the BLM and is managed under multiple use Class L (Limited Use) categories in conformance with the CDCA Plan (SES 2008a). The proposed project consists of an electrical generating facility, a substation, a transmission line, and ancillary facilities. As such, development of the proposed project is an allowed use under the Multiple-Use Class Guidelines.</p> <p>In addition, the CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan be considered through the Plan Amendment process. Therefore, the BLM would undertake a project-specific CDCA Plan amendment along with the ROW grant for the proposed Calico Solar Project. Upon BLM's amendment of the CDCA plan for the Calico Solar Project, the proposed project would be fully compliant with the CDCA Plan.</p> <p>This Environmental Impact Statement (EIS) acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.</p>

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
	<p>MULTIPLE-USE CLASS M (Moderate Use)</p> <p>6. Electrical Generation Facilities All types of electrical generation plants may be allowed in accordance with State, Federal, and local laws. —Wind/Solar May be allowed after NEPA requirements are met.</p> <p>7. Transmission Facilities — New gas, electric, and water facilities and cables for interstate communication may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met. [#5,85]</p> <p>Chapter 3 Wild Horse and Burros Element Goal 2. Protect wild horses and burros on public lands by conducting surveillance to prevent unauthorized removal or undue harassment of animals.</p>	<p>YES (with BLM's project-specific CDCA Plan Amendment)</p> <p>YES</p>	<p>The proposed project site is on lands administered by the BLM, and is located within the “Moderate” (Class M) use category of the BLM's CDCA Plan, with some areas designated as “Limited” (Class L). These lands are managed under the Multiple-Use Class M and Class L categories in conformance with the CDCA Plan (SES 2008a). The proposed project consists of an electrical generating facility, a substation, a transmission line, and ancillary facilities. As such, development of the proposed project is an allowed use under the Multiple-Use Class Guidelines.</p> <p>In addition, The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan be considered through the Plan Amendment process. Therefore, the BLM would undertake a project-specific CDCA Plan amendment along with the ROW grant for the proposed Calico Solar Project. Upon BLM's amendment of the CDCA plan for the Calico Solar Project, the proposed project would be fully compliant with the CDCA Plan.</p> <p>This Environmental Impact Statement (EIS) acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.</p> <p>As noted in the “Setting and Existing Conditions” subsection above, the proposed project site is not in the vicinity of an HA or HMA; therefore, the project site and surrounding area are not notable for the presence of wild horses or burros. As such, the proposed project would not result in any interference with BLM's management of an HMA, and would be consistent with this element of the CDCA Plan.</p>

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
	<p>Chapter 3 Energy Production and Utility Element Goal 1. Fully implement the network of joint-use planning corridors to meet projected utility needs to the year 2000.</p> <p>Specific electrical and natural gas right-of-way or power plant site applications made under the provisions of this element should be consistent with adopted California Energy Commission forecasts, which are reviewed biennially.</p> <p>Decision criteria are to:</p> <ul style="list-style-type: none"> (1) Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors; (2) Encourage joint use of corridors for transmission lines, canals, pipelines, and cables; (3) Provide alternative corridors to be considered during processing of applications; (4) Avoid sensitive resources wherever possible; (5) Conform to local plans whenever possible; (6) Consider wilderness values and be consistent with final wilderness recommendations; (7) Complete the delivery-systems network; (8) Consider ongoing projects for which decisions have been made, for example, the Intermountain Power Project; and (9) Consider corridor networks which take into account power needs and alternative fuel resources. 	YES	<p>The proposed project's linear facilities would be within the project site, and would interconnect at the SCE Pisgah Substation which is adjacent to the eastern boundary of the project site. Therefore, the proposed project would utilize existing ROWs, and would be consistent with this element of the CDCA Plan.</p>

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
	<p>Addendum B: Interim Management Guidelines</p> <p>Chapter III. Guidelines for Specific Activities</p> <p>Lands Actions – Disposal, Rights-of-Way, Access and Withdrawals</p> <p>2. Rights-of-Way: Existing rights-of-way may be renewed if they are still being used for their authorized purpose. New rights-of-way may be approved only for temporary uses that satisfy the non-impairment criteria.</p> <p>3. Right-of-Way Corridors: Right-of-way corridors may be designated on lands under wilderness review.</p>	YES	The non-impairment standard, directs that “until Congress has determined otherwise” the lands under review be managed so as not to impair their suitability as wilderness (CRS 2004). As the proposed project would not traverse an established Wilderness Area or Wilderness Study Area, the project would be in compliance with this guideline of the CDCA Plan.
Federal Wilderness Act, 16 U.S.C. § 1131-1136	(a) Establishment; Congressional declaration of policy; wilderness areas; administration for public use and enjoyment, protection, preservation... provisions for designation as wilderness areas In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.	YES	As the proposed project would not traverse an established Wilderness Area, the project would be consistent with this guideline.
Public Rangelands Improvement Act	Establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; and continue the policy of protecting wild free-roaming horses and burros.	YES	As noted in “Setting and Existing Conditions,” the project site would be located within the Cady Mountains rangeland allotment. However, according the BLM’s Rangeland Specialist from the Barstow Field Office, the land is currently permitted for grazing, and is identified in the West Mojave (WEMO) Plan, for voluntary relinquishment (BLM 2009n). Therefore, the proposed project would not interfere with the Cady Mountains rangeland allotment.

Applicable LORS	Description of Applicable LORS	Consistent?	Basis for Consistency
Wild and Free-Roaming Horse and Burro Act	Establishes BLM's authority to protect, manage, and control wild horses and burros to ensure that healthy herds thrive on healthy rangelands. BLM determines the "appropriate management level" (AML) of wild horses and burros on the public rangelands.	YES	As discussed above in detail in Section C.8.4.2, the proposed project would not contain or traverse an established HMA. As such, the proposed project would be consistent with this Act.
BLM Interim Policy Memorandum (CA-2009-020)	<ul style="list-style-type: none"> • Lands acquired by BLM under donation agreements, acquired for mitigation/ compensation purposes and with LWCF funds, are to be managed as avoidance/ exclusion areas for land use authorizations that could result in surface disturbing activities. • Should BLM–California managers have use authorizations applications pending, or receive new applications on lands that meet the above criteria, they are required to notify the State Director and set up a briefing to address how to respond to those applications. • Should managers have inquiries related to pre-application activities for any land use authorizations on lands that meet the above criteria, please notify applicants regarding the location of these lands as soon as possible and advise them to avoid these lands or provide details on how they would plan to operate or mitigate their project in a manner consistent with the values of the lands donated or acquired for conservation purposes. 	<p>INCONSISTENT (for the proposed project)</p> <p>CONSISTENT (for Reduced Acreage Alternative)</p> <p>CONSISTENT (for Avoidance of Donated and Acquired Lands Alternative)</p>	<p>As noted in the “Setting and Existing Conditions,” approximately 775 acres of the proposed project site have been acquired for mitigation/ compensation purposes by LWCF funds. In an Interim policy dated May 28, 2009, the State Director of the BLM issued an Instruction Memorandum regarding management of donated land and lands acquired by LWCF funds. As a result, LWCF lands are to be managed as avoidance/exclusion areas for land use authorizations that could result in surface disturbing activities (BLM 2009a). Construction and operation of the proposed project would not be in compliance with this policy.</p> <p>However, the both the Reduced Acreage Alternative and the Avoidance of Donated and Acquired Lands Alternative (discussed below in Sections C.8.5 and C.8.6, respectively) would avoid LWCF lands, and therefore, would not result in surface disturbing activities in the avoidance/exclusion areas. As such, both of these alternatives would be consistent with this BLM Interim Policy and its requirements.</p>
State			
None			
Local			
None			

Project Closure and Decommissioning

According to Section 3.12 of the applicant's project description, the solar generating facility is expected to have a lifespan of 40 years. At any point during this time, temporary or permanent closure of the solar facility could occur. Temporary closure would be a result of necessary maintenance, hazardous weather conditions, or damage due to a natural disaster. Permanent closure would be a result of damage that is beyond repair, adverse economic conditions, or other significant reasons.

Both temporary and permanent closures would require the applicant to submit to the CEC a contingency plan or a decommissioning plan, respectively. A contingency plan would be implemented to ensure compliance with applicable LORS, and appropriate shutdown procedures depending on the length of the cessation. A decommissioning plan would be implemented to ensure compliance with applicable LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

Upon closure of the facility or decommissioning, it is likely that the applicant would be required to restore lands affected by the project to their pre-project state. Given the fact that the proposed project site is located on undeveloped land, staff anticipates that project decommissioning would have impacts similar in nature to proposed project construction activities. Therefore, given the temporary nature of decommissioning activities and the eventual return of the lands to their current state, the effects of decommissioning on land use is not expected to be adverse.

C.8.4.3 CEQA LEVEL OF SIGNIFICANCE

For the purposes of CEQA compliance, the level of significance of each identified impact of the proposed project has been determined. The CEQA Lead Agency is responsible for determining whether an impact is significant and is required to adopt feasible mitigation measures to minimize or avoid each significant impact. Conclusions in this section are presented to identify the level of significance of each identified impact (as required by CEQA) as follows: less-than-significant (i.e., adverse, but not significant); less-than-significant with mitigation (i.e., can be mitigated to a level that is not significant); or significant and unavoidable (i.e., cannot be mitigated to a level that is not significant).

Agricultural Lands and Rangelands

As discussed above in detail in Section C.8.4.2 (under the subsection entitled "Agricultural Lands and Rangelands"), the farmland conversion impacts of the proposed project would "not result in an adverse impact," and the project would not involve other changes in the existing environment which could result in conversion of Farmland to non-agricultural uses. In addition, the proposed project would not be located on lands under Williamson Act contracts or zoned for agriculture. Therefore, proposed project impacts on agricultural lands would be less-than-significant.

In regards to rangelands, as noted in the "Setting and Exiting Conditions," the northeastern portion of the proposed project would be located within the Cady Mountains rangeland. The allotment is not currently permitted for grazing, and is identified in the West Mojave (WEMO) Plan for voluntary relinquishment (BLM 2009n). Therefore, the proposed

project is not expected to interfere with the Cady Mountains rangeland allotment. However, the rangeland is currently vacant and scheduled for voluntary relinquishment at some time in the future. Therefore, impacts to rangelands due to construction or operation of the proposed project would be less than significant under CEQA.

Finally, the project site is not located in an area that is under a Williamson Act Contract, and there would be no impacts.

Wilderness and Recreation

As discussed above in detail in Section C.8.4.2 (under the subsection entitled “Wilderness and Recreation”), wilderness, wilderness study areas, or recreation lands would not be directly affected by the project, but would be in the vicinity, and therefore, could be indirectly affected. In particular, potential impacts from the proposed project would indirectly affect the Cady Mountains WSA. Nonetheless, as described in the “Setting and Existing Conditions,” there are numerous wilderness and recreation areas surrounding the project site, which would be available to the public. Therefore, potential indirect impacts from the proposed project would be less than significant.

Horses and Burros

As discussed above in detail in Section C.8.4.2 (under the subsection entitled “Horses and Burros”), the proposed project would not contain or traverse any established BLM HMAs. Therefore, the proposed project would not result in any interference with BLM’s management of an HMA. There would be no impacts.

Land Use Compatibility and LORS Compliance

As discussed above in detail in Section C.8.4.2 (under the subsection entitled “Land Use Compatibility”), the project would not physically divide or disrupt an established community, and there would be no impact.

Staff’s analysis of the proposed project’s consistency with applicable federal land use LORS is presented in **Land Use Table 2** (state and local LORS are not applicable). With BLM’s issuance of a project-specific CDCA Plan Amendment, the proposed project would fully comply with the Plan. However, the proposed project would not be in compliance with BLM Interim Policy Memorandum; therefore, impacts associated with compliance with this federal land use LORS would be significant and unavoidable.

Cumulative Land Use Effects

Section C.8.8 (below) provides a detailed analysis of cumulative impacts. As discussed below, the potential combined development of approximately one million acres of land, would all combine to result in adverse effects on agricultural lands (one of the state’s most important resources), and recreational resources. Although the development of renewable resources in compliance with federal and state mandates is important and required, the conversion of thousands of acres of open space would result in a significant and unavoidable impact. In general, the land conversion impacts to these lands would preclude numerous existing land uses including recreational activities, rangeland management, and open space.

Because the Calico Solar Project would have no impacts on agricultural resources or rangelands, horses and burros, it would have no potential to contribute to cumulative impacts in this respect. However, the proposed project would combine with other past and reasonably foreseeable future projects to substantially reduce scenic values of wilderness areas and recreational resources in the Mojave Desert and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

C.8.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be located within the central portion of the proposed 850 MW project site. This alternative's boundaries and the revised locations of the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 1**. The CEC-proposed configuration of the Reduced Acreage Alternative avoids BLM acquired (LWCF) and donated lands, and minimizes impacts to biological and cultural resources.

C.8.5.1 SETTING AND EXISTING CONDITIONS

The setting for this alternative would be approximately 2,600 acres or 33 percent of the lands affected by the proposed project. Lands affected by this alternative would be located generally in the center of the proposed project site, and would be entirely under the jurisdiction of the BLM. In addition, as this alternative would retain 31 percent of the SunCatchers proposed under the proposed project, the net generating capacity would be approximately 275 MW. This alternative would require SCE to expand the existing Pisgah Substation, and install a fiber optic communications link along the existing e 65-mile Pisgah-Lugo and Pisgah-Gale transmission lines. Please see the discussion existing conditions within affected BLM lands under Section C.8.4.1.

C.8.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Agricultural Lands and Rangelands

With a 67 percent reduction in the site, any land conversion impact would also be proportionately less. As discussed above in detail in Section C.8.4.2 (under the subsection entitled "Agricultural Lands and Rangelands") the proposed project would not result in a conversion of farmland. Similarly, this alternative would not affect farmlands, and would not be located on land under Williamson Act contracts.

Similar to the proposed project, this alternative would not adversely affect the Cady Mountains rangeland allotment since the allotment is currently vacant and is scheduled for voluntary relinquishment. Therefore, the types of effects on agricultural lands and rangelands resulting from this alternative would be similar to the proposed project.

Wilderness and Recreation

The conversion of 2,600 acres of land to support the components and activities associated with this alternative would indirectly disrupt current wilderness areas and recreational activities in established federal and state areas, which would result in

adverse effects on recreational users of these lands. However, this effect would be proportionally less than the 8,230 acres affected by the proposed project.

Horses and Burros

Similar to proposed project, this alternative would not contain or traverse any established BLM HMAs. Therefore, this alternative would not result in any interference with BLM's management of an HMA.

Land Use Compatibility and LORS Compliance

Similar to the proposed project, this alternative would not physically divide or disrupt an established community.

Staff's analysis of the proposed project's consistency with applicable federal land use LORS is presented in **Land Use Table 2**. These federal LORS would apply to this alternative. This alternative would be consistent with applicable federal land use LORS, including BLM's Interim Policy Memorandum (CA-2009-020) for avoiding LWCF lands. With BLM's issuance of a project-specific CDCA Plan Amendment, the proposed project would fully comply with the Plan. As discussed in **Land Use Table 2**, the proposed project would not be consistent with this policy. Therefore, this alternative would have no land use LORS inconsistencies compared to the proposed project, which is not consistent with BLM's Interim Policy Memorandum for avoiding LWCF lands..

Cumulative Land Use Effects

This alternative would result in the conversion of 2,600 acres of undeveloped open space with an industrial utility use (i.e., a 275 MW power plant and associated infrastructure). When compared to the proposed project, this alternative would result in 67 percent less land conversion to industrial uses; nonetheless, the cumulative effects of this amount of land conversion along with all other existing, planned, and proposed projects would result in adverse cumulative land conversion. Section C.8.8 (below) provides a detailed analysis of cumulative impacts. The potential combined development of approximately one million acres of land, would all combine to result in adverse effects on agricultural lands (one of the state's most important resources), and recreational resources. Although the development of renewable resources in compliance with federal and state mandates is important and required, the conversion of thousands of acres of open space would result in a significant and unavoidable impact. In general, the land conversion impacts to these lands would preclude numerous existing land uses including recreational activities, rangeland management, and open space. Because the Calico Solar Project would have no impacts on agricultural resources, rangelands, horses and burros, it would have no potential to contribute to cumulative impacts in this respect. However, the proposed project would combine with other past and reasonably foreseeable future projects to substantially reduce scenic values of wilderness areas and recreational resources in the Mojave Desert and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

C.8.5.3 CEQA LEVEL OF SIGNIFICANCE

Agricultural Lands and Rangelands

As discussed above in subsection C.8.5.2, and similar to the proposed project, there would be no impacts on agricultural and rangelands resulting from this alternative.

Wilderness and Recreation

As discussed above in subsection C.8.5.2, and similar to the proposed project, impacts resulting from this alternative to wilderness and recreation would be less-than-significant.

Horses and Burros

As discussed above in subsection C.8.5.2, and similar to the proposed project, there would be no impacts on horses and burros resulting from this alternative.

Land Use Compatibility and LORS Compliance

This alternative would comply with all federal LORS, including the BLM Interim Policy Memorandum (CA-2009-020), and any land use LORS consistency impacts would be less-than-significant.

Cumulative Land Use Effects

As discussed above in subsection C.8.5.2, and similar to the proposed project, the cumulative land use impacts of this alternative would be significant and unavoidable.

C.8.6 AVOIDANCE OF DONATED AND ACQUIRED LANDS ALTERNATIVE

The Avoidance of Donated and Acquired Lands Alternative would be an approximately 720 MW solar facility located within the boundaries of the proposed 850 MW project site. This alternative, and the associated transmission line, substation, construction laydown, and control facilities are shown in Alternatives Figure 2.

C.8.6.1 SETTING AND EXISTING CONDITIONS

The alternative would include approximately 7,050 acres or 85 percent of the lands affected by the proposed project. The BLM lands affected by this alternative would be the same as the proposed project site, with the elimination of the 1,180 acres of those lands. In addition, the net generating capacity would be 720 MW, which would require the eventual 65-mile upgrade of the existing Pisgah-Lugo transmission line. Please see the discussion of existing conditions within affected BLM lands under Section C.8.4.1.

C.8.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Agricultural Lands and Rangelands

With a 15 percent reduction in the site, any land conversion impact would also be proportionately less. As discussed above in detail in Section C.8.4.2 (under the subsection entitled “Agricultural Lands and Rangelands”), the proposed project would not result in a conversion of farmland. Similarly, this alternative would not affect farmlands, and would not be located on land under Williamson Act contracts.

Similar to the proposed project, this alternative would not adversely affect the Cady Mountains rangeland allotment since the allotment is currently vacant and is scheduled for voluntary relinquishment. Therefore, the types of effects on agricultural lands and rangelands resulting from this alternative would be similar to the proposed project.

Wilderness and Recreation

The conversion of 7,050 acres of land to support the components and activities associated with this alternative would indirectly disrupt current wilderness areas and recreational activities in established federal and state areas, which would result in adverse effects on recreational users of these lands. However, this effect would be proportionally less than the 8,230 acres affected by the proposed project.

Horses and Burros

Similar to proposed project, this alternative would not contain or traverse any established BLM HMAs. Therefore, this alternative would not result in any interference with BLM’s management of an HMA.

Land Use Compatibility and LORS Compliance

Similar to the proposed project, this alternative would not physically divide or disrupt an established community.

Staff’s analysis of the proposed project’s consistency with applicable federal land use LORS is presented in **Land Use Table 2**. These federal LORS would apply to this alternative. This alternative would be consistent with applicable federal land use LORS, including BLM’s Interim Policy Memorandum (CA-2009-020) for avoiding LWCF lands. With BLM’s issuance of a project-specific CDCA Plan Amendment, the proposed project would fully comply with the Plan. As discussed in **Land Use Table 2**, the proposed project would not be consistent with the BLM’s Interim Policy Memorandum (CA-2009-020). However, this alternative would avoid LWCF land, and therefore, would not result in surface disturbing activities in the avoidance/exclusion areas. As such, the Avoidance of Donated and Acquired Lands Alternative would be consistent with all applicable LORS; and in particular the BLM’s Interim Policy Memorandum (CA-2009-020). This alternative would have no land use LORS inconsistencies, compared to the proposed project.

Cumulative Land Use Effects

This alternative would result in the conversion of 7,050 acres of undeveloped open space with an industrial utility use (i.e., a 720 MW power plant and associated infrastructure). When compared to the proposed project, this alternative would result in 15 percent less land conversion to industrial uses; nonetheless, the cumulative effects of this amount of land conversion along with all other existing, planned, and proposed projects would result in adverse cumulative land conversion. Section C.8.8 (below) provides a detailed analysis of cumulative impacts. The potential combined development of approximately one million acres of land, would all combine to result in adverse effects on agricultural lands (one of the state's most important resources), and recreational resources. Although the development of renewable resources in compliance with federal and state mandates is important and required, the conversion of thousands of acres of open space would result in a significant and unavoidable impact. In general, the land conversion impacts to these lands would preclude numerous existing land uses including recreational activities, rangeland management, and open space. Because the Calico Solar Project would have no impacts on agricultural resources, rangelands, horses and burros, it would have no potential to contribute to cumulative impacts in this respect. However, the proposed project would combine with other past and reasonably foreseeable future projects to substantially reduce scenic values of wilderness areas and recreational resources in the Mojave Desert and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

C.8.6.3 CEQA LEVEL OF SIGNIFICANCE

Agricultural Lands and Rangelands

As discussed above in subsection C.8.5.2, and similar to the proposed project, there would be no impacts on agricultural and rangelands resulting from this alternative.

Wilderness and Recreation

As discussed above in subsection C.8.5.2, and similar to the proposed project, impacts resulting from this alternative to wilderness and recreation would be less-than-significant.

Horses and Burros

As discussed above in subsection C.8.5.2, and similar to the proposed project, there would be no impacts on horses and burros resulting from this alternative.

Land Use Compatibility and LORS Compliance

This alternative would comply with all applicable federal land use LORS, including the BLM's Interim Policy Memorandum (CA-2009-020). Therefore, impacts related to LORS compliance would be less-than-significant.

Cumulative Land Use Effects

As discussed above in subsection C.8.5.2, and similar to the proposed project, the cumulative impacts of this alternative would be significant and unavoidable.

C.8.7 NO PROJECT/NO ACTION ALTERNATIVE

NO PROJECT/NO ACTION ALTERNATIVE #1:

No Action on the Calico Solar Project Application and on CDCA Land Use Plan Amendment

With the No Project/No Action Alternative, the proposed action would not be undertaken. The BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality [43 U.S.C. 1781 (b)] in conformance with applicable statutes, regulations, policy and land use plan.

The results of the No Project/No Action Alternative would be the following:

- The impacts of the proposed project would not occur;
- The land on which the project is proposed may or may not become available to other uses (including another solar project), depending on BLM's actions with respect to the amendment of the California Desert Conservation Area Plan;
- The benefits of the proposed project in reducing greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM, and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new ground disturbance. As a result, no loss or degradations to land use resources (including agricultural lands, rangelands, wilderness, recreation resources, horses and burros, and issues related to land use compatibility and LORS compliance) from construction or operation of the proposed project would occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

If this project is not approved, renewable projects would likely be developed on other sites in the California Desert or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are large solar and wind projects proposed on BLM land along the Interstate 40 corridor within a few miles of the Calico Solar Project site. In addition, there are currently over 70 applications for solar projects covering over 650,000 acres pending with BLM in California.

NO PROJECT/NO ACTION ALTERNATIVE #2:

No Action on Calico Solar Project and Amend the CDCA Land Use Plan to Make the Area Available for Future Solar Development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM, and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with a different solar technology. As a result, ground disturbance would result from the construction and operation of the facility providing different solar technology and would likely result in a loss or degradation to land use resources. Different solar technologies require different amounts of grading and maintenance; however, it is expected that all solar technologies require some grading and ground disturbance. As such, this No Project/No Action Alternative could result in impacts to land use resources similar to the impacts under the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE #3:

No Action on the Calico Solar Project Application and Amend the CDCA Land Use Plan to Make the Area Unavailable for Future Solar Development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM, and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no corresponding land disturbance. As a result, the land use resources of the site are not expected to change noticeably from existing conditions and, as such, this No Project/No Action Alternative would not result in impacts to land use resources. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.8.7.1 SETTING AND EXISTING CONDITIONS

The land use setting for the No Project/No Action Alternative would include lands that would contain the proposed project site, which would become available for other uses that are consistent with BLM's land use plans. Subsection C.8.4.1 (above) describes the existing setting of these lands in detail.

C.8.7.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

With the No Project /No Action Alternative, the construction- and operation-related impacts of the proposed project would not occur. However, if the No Project/No Action Alternative #2 were approved, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, potentially including other renewable energy projects, recreational activities, etc. For example, according to **Cumulative Impacts Table 1A**, there are 35 solar energy projects and 33 wind energy projects proposed on BLM land within the area served by the BLM Barstow and Needles Field Offices, and there are currently 125 applications for solar projects covering approximately one million acres pending with BLM in the California Desert District.

Under the No Project/No Action alternative, the land use-related impacts of the Calico Solar project would not occur at the proposed site. The conversion of 8,230 acres of land that would be converted as a result of the proposed project would not occur, and a project-specific CDCA Plan amendment would not be necessary. Although, it is possible that the proposed project site could be developed with power generation and/or utility uses in the future given the existing and planned energy-related infrastructure in the area (i.e., SCE Pisgah Substation), the specific size, type, and timing of such use would be unknown. With the No Project/No Action Alternative, the effects on land use would be similar to what is currently occurring (undeveloped open space) at the proposed project site and in the surrounding area.

C.8.7.3 CEQA LEVEL OF SIGNIFICANCE

Under the No Project/No Action alternative land use impacts to the proposed project site and area would be similar to those currently occurring under the existing conditions in the area. Given that there would be no significant change over the existing conditions, there would be no land use impacts related to the No Project/No Action alternative.

C.8.8 PROJECT-RELATED FUTURE ACTIONS - LAND USE, RECREATION, AND WILDERNESS

This section examines the potential impacts of future transmission line construction, line removal, substation expansion, and other upgrades that may be required by Southern California Edison (SCE) as a result of the Calico Solar project. The SCE upgrades are a reasonably foreseeable event, if the Calico Solar project is approved and constructed as proposed.

The SCE project will be fully evaluated in a future EIR/EIS prepared by the BLM and the California Public Utilities Commission (CPUC). Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information. The purpose of this analysis is to inform the Energy Commission and BLM, interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the Calico Solar project.

The project components and construction activities associated with these future actions are described in detail in Section B.3 of this Staff Assessment/EIS. This analysis examines the construction and operational impacts of two upgrade scenarios

- The **275 MW Early Interconnection Option** would include upgrades to the existing SCE system that would result in 275 MW of additional latent system capacity. Under the 275 MW Early Interconnection option, Pisgah Substation would be expanded adjacent to the existing substation, one to two new 220 kV structures would be constructed to support the gen-tie from the Calico Solar project into Pisgah Substation, and new telecommunication facilities would be installed within existing SCE ROWs.
- The **850 MW Full Build-Out Option** would include replacement of a 67-mile 220 kV SCE transmission line with a new 500 kV line, expansion of the Pisgah Substation at a new location and other telecommunication upgrades to allow for additional transmission system capacity to support the operation of the full Calico Solar project.

C.8.8.1 ENVIRONMENTAL SETTING

The environmental setting described herein incorporates both the 275 MW Early Interconnection and the 850 MW Full Build-Out options. The setting for the 275 MW Early Interconnection upgrades at the Pisgah Substation and along the telecomm corridors is included within the larger setting for the project area under the 850 MW Full Build-Out option, which also includes the Lugo-Pisgah transmission corridor.

The transmission line would follow a generally southwesterly route between the SCE Pisgah Substation (near Interstate 40 [I-40]) and the SCE Lugo Substation (south of the City of Hesperia) for approximately 67 miles. The line would be built within the existing SCE ROW of the Lugo-Pisgah 220 kV No. 2 transmission line except for approximately the last 10 miles south of Hesperia where a new ROW would be required. Under the 275 MW Early Interconnection option, the existing Pisgah Substation (approximately 5 acres) would be expanded to the northwest by an area approximately 270 feet by 100 feet within SCE's existing 220 kV ROW. Under the 850 MW Full Build-Out, the Pisgah Substation would be expanded from 40 to 100 acres adjacent or nearby to the existing substation to accommodate new electrical and communication facilities and future growth.

The early interconnection option would be located within existing SCE facilities and ROWs and the full build-out would be located primarily within SCE ROW on BLM land within the Barstow Field Office. The area where the new 500 kV transmission line would be constructed is primarily open, undeveloped land within the Mojave Desert. Communities near the proposed transmission line include Hesperia, Apple Valley, and Victorville at the southwestern end of the line, and Hector, Pisgah, Lavic, and Ludlow along the northeastern portion.

The project area is located within the Desert Planning Region identified in the County of San Bernardino 2007 General Plan (San Bernardino 2007). The Desert Planning Region includes about 93 percent (18,735 square miles) of the land within San Bernardino County and much of the Mojave Desert. Approximately 81 percent of the County's total land area is controlled by federal or State agencies, with the BLM

managing approximately 47 percent of the county's land base. Publicly-owned lands are distributed throughout the Desert Planning Region and tend to be interspersed with privately owned lands. Approximately 4 percent of the county land area is within one of 24 incorporated communities, with the remaining 15 percent or 1.9 million acres of private land distributed throughout the unincorporated parts of the county (San Bernardino 2007). In addition to the County of San Bernardino General Plan, the southwesterly portion of the proposed upgrades area may fall within the City of Hesperia General Plan. Where possible, the line would be constructed within existing ROWs.

The transmission line route would traverse open desert where agricultural land is not prevalent. According to the DOC's FMMP, the majority of land traversed by the proposed transmission line is designated as "Other Land," with smaller areas within "Urban and Built-Up Land" designations (DOC 2008). The transmission route also would border the Rodman Mountains Wilderness Area, as well as the Ord Mountain and Johnson Valley rangeland allotments (BLM 2009o).

C.8.8.2 ENVIRONMENTAL IMPACTS

The proposed upgrades would not physically divide an existing community. Most of the transmission route and telecommunication facilities upgrades are proposed to be sited within or adjacent to existing SCE ROWs. The upgrades would require access to the existing ROWs by construction vehicles and equipment, which would use existing access roads, where possible. However, SCE would need to acquire rights for any new spur or access roads. Any additional impacts to land use would be temporary and confined to the work areas. There likely would be no displacement of any existing land uses given the undeveloped nature of the majority of the proposed ROW. The development of spur roads would not be considered a significant impact to land uses in the area, because the spur roads would be along an existing ROW. Furthermore, since the utility corridor and the substations are established land uses, upgrading most of the Lugo-Pisgah line and installing the 220/500 kV switchrack are not expected to conflict with applicable LORS.

In addition, the approximately 10 miles of new ROW would be in communities with planning and zoning requirements that would likely prevent any physical divisions. The upgrades would likely be constructed in accordance with the applicable land use plans, including, but not limited to the San Bernardino County and City of Hesperia planning and zoning requirements as defined in the respective General Plans. Access to all uses would be fully restored once construction of the upgrades is complete.

The linear route of the proposed transmission line would not be expected to affect agricultural lands since the majority of the transmission line would traverse open desert areas that are not designated as Important Farmland by the DOC. However, the route would traverse the Ord Mountain and Johnson Valley rangeland allotments. Nonetheless, any permanent disturbance to agricultural or rangeland would be limited to the tower footings, and it is assumed that agricultural/rangeland activities would be allowed within the transmission line ROW.

The transmission route would border the Rodman Mountains Wilderness Area, and the existing ROW corridor would pass through the Johnson Off-Highway Vehicle Area, the largest open area for OHVs in California. The noise and presence of heavy equipment associated with project construction may temporarily reduce visitation to these wilderness and recreational areas. Recreationists may cancel or schedule their visits to avoid construction periods thereby resulting in temporarily reduced visitation where construction could pose a safety hazard to OHV users and other recreationists. However, due to the size and available stock of the recreation areas in this desert region, and the relatively small portion crossed by the proposed upgrades, it is assumed that recreationists would not be precluded from recreational activities.

From an operational perspective, presence of the transmission line and associated facilities would not disrupt actual use of existing residential properties or structures. Access to all uses would be fully restored once construction of the upgrades is complete.

C.8.8.3 MITIGATION

To minimize land use impacts, the transmission line route should follow existing SCE ROWs where feasible, and any new ROWs should be developed along parcel edges and in accordance with all applicable land use LORS. Authorization and use would be subject to administrative review at the time of issuance of a final BLM decision regarding the authorization or use.

SCE should post notices on the ROW or at other sites where the public would be affected by construction activities. Notices should be posted approximately one month prior to commencing work. At ROW ingress and egress points, postings should be placed along the ROW and at work sites approximately two weeks prior to the closing of public access. Recommended mitigation should require SCE to identify and provide a public liaison person before and during construction to respond to public concerns about construction disturbances.

C.8.8.4 CONCLUSION

The SCE upgrades would not cause a significant change in land use. Once construction is completed, there would not be a change in access for recreation in and across the transmission line corridor. Since the transmission line and telecommunication upgrades would mostly be within an existing and established ROW, on existing, retrofitted, or replaced towers, or would be underground, the project components would not permanently disrupt or divide the physical arrangement of an established community. Also for these reasons, the SCE upgrades would not restrict existing or future land uses along the route.

C.8.9 CUMULATIVE IMPACT ANALYSIS

C.8.9.1 AGRICULTURAL LANDS AND RANGELANDS

Section B.3, Cumulative Scenario, provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these

projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figures 1 and 2** and in **Cumulative Tables 1A and 1B**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate area, as shown on **Cumulative Impacts Figure 3 and Cumulative Tables 2 and 3**. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the Newberry Springs/Ludlow Area. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the Energy Commission and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in Section B.3 have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this SA/Draft EIS.

Geographic Extent

The geographic scope for the analysis of cumulative impacts related to agricultural lands and rangelands includes the desert region of San Bernardino County. The county's community plans map defines the desert region as the entire area north and northeast of the San Bernardino National Forest, which accounts for the majority of the county (SBC 2009a).

Cumulative impacts include the conversion of agricultural land and/or rangelands that would conflict with existing land uses. Projects related to agriculture and rangelands consist of all construction activities, and residential, and industrial developments within the region. For the purpose of this analysis, in addition to the projects listed in **Cumulative Impacts Tables 2 and 3**, data obtained from the DOC and the BLM's online GIS maps were considered when identifying activities that could contribute to cumulative impacts.

As noted above in the "Setting and Existing Conditions," agricultural lands are not present on the proposed project site, and the nearest area with agricultural development is approximately 10 miles west in the community of Newberry Springs. In addition, according to DOC's Important Farmland maps of San Bernardino County, the majority of the desert region is outside of the survey boundaries; and the areas that are surveyed include the valley region south of the San Bernardino National Forest and the southwestern portion of the desert region. Designations for the desert region primarily consist of "Grazing Land," with a concentration of "Urban and Built-Up Land" designations within the cities of Barstow, Victorville, and Hesperia. The area surrounding Newberry Springs is mostly designated as "Other Land"; and isolated

“Prime farmland” and “Farmland of Statewide Importance” designations are located throughout the surveyed area, with a few small areas of concentration.

The proposed project would be located within the Cady Mountains rangeland allotment; in addition, numerous rangeland allotments are located throughout the desert region of San Bernardino County. The Cronese Lake allotment is located directly north of Cady Mountains, and the following allotments are located on the west side of the desert region: Ord Mountain, Johnson Valley, Stoddard Mountain, Rattlesnake Canyon, Round Mountain, Shadow Mountains, Buckhorn Canyon, Shadow Mountains, Goldstone, Superior Mountains, Harper Lake, Gravel Hills, Monolith Cantil, Pilot Knob, Lava Mountains, Spangler Hills, Boron Sheep, and Cantil Common. The following allotments are located on the east side of the desert region: Valley View, Kessler Springs, Valley Wells, Clark Mountain, Jean Lake, Horsethief Springs, Lanfair Valley, Crescent Peak, Piute Valley, and Lazy Daisy (BLM 2009o).

Existing Cumulative Conditions

Agricultural land is not prevalent within the desert region of San Bernardino County; however, north of I-40, within the communities of Daggett and Newberry Springs, FMMP-designated Farmland is present. According to the San Bernardino County General Plan maps, the primary land use zoning designation in this area is Rural Living with intermittent areas with Agriculture designations (SBC 2009b). As such, the existing development described in **Cumulative Impacts Table 2**, which includes solar energy facilities, has potentially interfered with agricultural activities. In addition, as noted above, BLM rangeland allotments are located throughout the desert region of the county. Existing development is located either within an allotment or in the vicinity of an allotment. As a result, past and present development has contributed to the conversion of existing rural and open space land uses, including agriculture and rangeland.

Future Foreseeable Projects

Foreseeable Projects in the Project Area. As described in **Cumulative Impacts Figure 3** and **Cumulative Impacts Table 3**, four solar and three wind energy projects are proposed in the Newberry Springs/Ludlow area which would convert approximately 90,000 acres of desert lands to industrial uses. Also, the U.S. Marine Corps is expected to expand the existing 596,000-acre Twentynine Palms military base by 400,000 acres. Although this desert region is not a highly productive agricultural area, there are areas designated by the State and county for agricultural land uses.

In addition, as described in **Cumulative Impacts Figure 2** and **Table 1A**, the desert region of San Bernardino County is within the jurisdiction of BLM’s Barstow and Needles District Offices. Cumulative impacts to rangeland allotments would be significant, since 35 solar energy projects and 33 wind energy projects have been proposed in or near designated allotments noted in the “Geographic Extent” subsection. As such, future foreseeable development would contribute to the conversion of existing rural and open space land uses, including agriculture and rangeland.

Foreseeable Renewable Projects in the California Desert. As shown on **Cumulative Impacts Figures 1** and **2** and **Table 1**, a total of 63 projects and 567,882 acres are proposed for development of solar energy, and 62 projects and 433,721 acres of wind

energy development in the California Desert. This represents a worst-case scenario and not all of these projects would be ultimately developed. Nonetheless, multiple projects would result in the conversion of rangeland allotments to industrial uses.

Conclusion

Although, the proposed project by itself would not convert agricultural land to nonagricultural uses, the conversion of lands due to past and present projects, and the potential development of the approximately one million acres of land, would all combine to result in adverse effects on agricultural lands (one of the state's most important resources) and rangeland. Therefore, although the development of renewable resources in compliance with federal and State mandates is important and required, this conversion would contribute to a significant and unavoidable cumulative impact to agricultural resources.

C.8.9.2 WILDERNESS AND RECREATION

Geographic Extent

The geographic scope for the analysis of cumulative impacts related to wilderness and recreation includes the local and regional wilderness areas and recreation facilities within the desert region of San Bernardino County. **Cumulative Impacts Figure 2** illustrates the wilderness areas and major State and national parks in this desert region.

As noted above in the "Setting and Existing Conditions" subsection, adjacent to the northern boundary of the project site is the Cady Mountains WSA, and wilderness areas in the vicinity of the proposed project site include the Rodman Mountains, Bristol Mountains, Kelso Dunes, and Newberry Mountains. Wilderness areas provide ample opportunities for recreation activities. In addition, approximately 32 miles east of the project site is the Mojave National Preserve which is a 1.6-million acre park managed by the U.S. National Park Service (NPS 2009). Within the Mojave Preserve is the Providence State Recreation Area (SRA), which is managed by the California State Parks. This area also provides space for recreational activities; in particular, nature hikes and cavern tours are the main attractions to this park. Other recreational facilities primarily include OHV and camping sites located throughout the county.

Existing Cumulative Conditions

As illustrated in **Cumulative Impacts Figure 2**, existing projects in the Newberry Springs/Ludlow area, in particular the Department of Defense expansion, occupy significant portions of land in the project area.

Future Foreseeable Projects

Foreseeable Projects in the Project Area. As shown in **Cumulative Impacts Figure 3** and **Cumulative Impacts Table 3**, four solar and three wind energy projects are proposed in the Newberry Springs/Ludlow area which would convert approximately 90,000 acres of desert lands to industrial uses. Also, the U.S. Marine Corps is expected to expand the existing 596,000-acre Twentynine Palms military base by 400,000 acres.

In addition, as shown in **Cumulative Impacts Figure 2** and **Table 1A**, the desert region of San Bernardino County is within the jurisdiction of BLM's Barstow and Needles District Offices, where 35 solar energy projects and 33 wind energy projects have been proposed in project area. As such, future foreseeable development would contribute to the conversion of existing rural and open space land uses, including wilderness and recreation.

Foreseeable Renewable Projects in the California Desert. As shown on **Cumulative Impacts Figures 1 and 2** and **Table 1**, a total of 63 projects and 567,882 acres are proposed for development of solar energy, and 62 projects and 433,721 acres of wind energy development in the California Desert. This represents a worst-case scenario and not all of these projects would be ultimately developed. Nonetheless, multiple projects would result in the conversion of rangeland allotments to industrial uses.

Conclusion

In addition to the proposed Calico Solar facility, there are many past, present, or reasonably foreseeable future actions that contribute to impacts to recreation and wilderness areas. Regionally, there have been both positive and negative impacts to recreational and wilderness resources as a result of development projects within San Bernardino County. Development of highway access to the region has provided direct vehicular access to open desert scenery for residents throughout southern California. This increased access has improved the recreational experience for some users by making the area more accessible, but has also detracts from the recreational experience for other users who prefer remote camping, hiking, and hunting away from populated areas.

Presently, as noted above, numerous energy-related development projects, including the proposed project, would remove large acreages of land from potential recreational use, and would have adverse effects on the viewscape that would result in some users seeking out other areas of the desert for their activities (see the cumulative analysis in the **Visual Resources** section). Similarly, within wilderness areas, the attraction of hiking, camping, and other outdoor activities is likely to decrease due to the increased human activity in the region, and the consequent impact of development on the viewscape. The proposed project would permanently change the nature of land use at the proposed project site from Government Special Public Limited Use and Moderate Use to an intensive utility use for the generation of power. Therefore, the combined effect of the overall cumulative past, present, and proposed and reasonably foreseeable projects, including the proposed project, in the desert region of San Bernardino County would adversely affect recreation and wilderness resources, resulting in a significant and unavoidable under CEQA.

C.8.9.3 HORSES AND BURROS

Geographic Extent

Cumulative impacts would result in changes in the existing environment which, due to their nature or location, result in interference with BLM's management of HMAs. The cumulative analysis of wild horses and burros was conducted using BLM maps of HMAs within San Bernardino County.

Existing Cumulative Conditions

The Chemehuevi HMA is the closest management area and is the only HMA within San Bernardino County. The HMA is located approximately 100 miles southeast of the project site near the California-Nevada border. This area is not notable for significant past or present development.

Future Foreseeable Projects

Foreseeable Projects in the Project Area. As shown in **Cumulative Impacts Figure 3** and **Cumulative Impacts Table 3**, four solar and three wind energy projects are proposed in the Newberry Springs/Ludlow area which would convert approximately 90,000 acres of desert lands to industrial uses. Also, the U.S. Marine Corps is expected to expand the existing 596,000-acre Twentynine Palms military base by 400,000 acres. However, as no HMAs are in the vicinity of the proposed project, it is unlikely that future projects within the project area would impact horses or burros.

Foreseeable Renewable Projects in the California Desert. As shown on **Cumulative Impacts Figures 1** and **2** and **Table 1**, solar and wind applications for use of BLM and private land, cover approximately 1 million acres of the California Desert Conservation Area. However, as shown on BLM maps of the HMAs, there are only three HMAs in the California Desert, of which Chocolate Mule Mountains would be the only HMA in the vicinity of proposed renewable energy projects (BLM 2009k).

Conclusion

Although the proposed Calico Solar facility would not adversely impact horses or burros, there are other present or reasonably foreseeable future actions that could contribute to impacts to HMAs within the region. Authorized and unauthorized vehicle use, and maintenance and construction of utility rights-of-way can have a slight impact to burros by removal of vegetation utilized for forage, and there is always a danger of vehicles colliding with burros. The impact of the proposed and probable development projects would cumulatively remove and isolate potential grazing sites for burros. However, in areas of close proximity to HMAs, development projects would be required to consider impacts related to wild horses and burros. Therefore, cumulative impacts would be less than significant.

C.8.9.4 LAND USE COMPATIBILITY AND LORS COMPLIANCE

Geographic Extent

The geographic scope for the analysis of cumulative impacts related to land use compatibility and LORS compliance are the local and regional communities and sensitive receptors. Cumulative impacts could result from the physical division of an established community or conflict with any applicable land use plan, policies, or regulation adopted for the purpose of avoiding or mitigating environmental impacts.

Existing Cumulative Conditions

As described in **Cumulative Impacts Table 2**, past and present projects occurring in the vicinity of the proposed project site include two solar energy generating facilities, the expansion of the Twentynine Palms Marine base, and two aggregate mining operations.

In addition, the surrounding area consists of undeveloped desert land and mountain terrain with small rural communities in the vicinity. The closest community is Newberry Springs located approximately 10 miles west of the project site, where the dominant land use designation is Rural Living and intermittent areas of agricultural activities.

Future Foreseeable Projects

Foreseeable Projects in the Project Area. As shown in **Cumulative Impacts Figure 3** and **Cumulative Impacts Table 3**, four solar and three wind energy projects are proposed in the Newberry Springs/Ludlow area which would convert approximately 90,000 acres of desert lands to industrial uses. Also, the U.S. Marine Corps is expected to expand the existing 596,000-acre Twentynine Palms military base by 400,000 acres.

In addition, as shown in **Cumulative Impacts Figure 2** and **Table 1A**, the desert region of San Bernardino County is within the jurisdiction of BLM's Barstow and Needles District Offices, where 35 solar energy projects and 33 wind energy projects have been proposed in the project area. As such, future foreseeable development would contribute to the conversion of existing rural and open space land uses.

Foreseeable Renewable Projects in the California Desert. As shown on **Cumulative Impacts Figures 1 and 2** and **Table 1**, a total of 63 projects and 567,882 acres are proposed for development of solar energy, and 62 projects and 433,721 acres of wind energy development in the California Desert. This represents a worst-case scenario and not all of these projects would be ultimately developed. Nonetheless, multiple projects would result in the convert existing land uses to an industrial use.

Conclusion

Proposed developments near the project site that would have the potential to induce cumulative impacts include solar and wind energy generation projects, and the expansion of the existing military base. In consideration of cumulative land use compatibility impacts, the implementation of renewable projects in southern California would occur mostly in undeveloped desert lands or areas of rural development and open space, and therefore, would not create physical divisions of established residential communities. Nonetheless, as noted above, approximately one million acres of land are proposed for solar and wind energy development in the southern California desert lands. The conversion of these lands would preclude numerous existing land uses including recreation, wilderness, rangeland, and open space, and therefore, would result in a significant cumulative land conversion impact. The proposed project's conversion of approximately 8,230 acres in an undeveloped portion of San Bernardino County and on BLM lands in combination with the land conversion impacts of past, present, and reasonably foreseeable future projects in the area would be cumulatively considerable, and a significant and unavoidable impact under CEQA.

C.8.10 COMPLIANCE WITH LORS

A detailed discussion of the proposed project's compliance with LORS applicable to land use, recreation, and wilderness is provided above in subsection C.8.4.2, and **Land Use Table 2** (Project Compliance with Adopted Land Use LORS).

C.8.11 NOTEWORTHY PUBLIC BENEFITS

The proposed project would permanently change the nature of land use at the project site from open space lands, to an intensive utility for the generation of power. Therefore, from a land use perspective, development of the proposed project would not result in any noteworthy public benefits because:

- the Calico Solar Project site would be developed with 34,000 SunCatchers and associated ancillary facilities and linear components on approximately 8,230 acres of undeveloped land in San Bernardino County, which would result in the conversion of BLM-administered public land to an industrial use;
- the proposed project would disturb LWCF (donated) lands that have been prohibited from development by the BLM and intended to mitigate the impacts of past projects; and
- the proposed project would contribute to the cumulative conversion of approximately one million acres of open space, recreation, wilderness, and agricultural lands in the southern California desert for the purposes of renewable energy development.

Therefore, although the development of the proposed project is intended to address the requirements of federal and State mandates for renewable energy, the land conversion and associated land use impacts would not yield any noteworthy public benefits related to land use, recreation, or wilderness resources.

C.8.12 PROJECT CLOSURE AND DECOMMISSIONING

According to Section 3.12 of the applicant's project description, the solar generating facility is expected to have a lifespan of 40 years. At any point during this time, temporary or permanent closure of the solar facility could occur. Temporary closure would be a result of necessary maintenance, hazardous weather conditions, or damage due to a natural disaster. Permanent closure would be a result of damage that is beyond repair, adverse economic conditions, or other significant reasons.

Both temporary and permanent closures would require the applicant to submit to the CEC a contingency plan or a decommissioning plan, respectively. A contingency plan would be implemented to ensure compliance with applicable LORS, and appropriate shutdown procedures depending on the length of the cessation. A decommissioning plan would be implemented to ensure compliance with applicable LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

Upon closure of the facility or decommissioning, it is likely that the applicant would be required to restore lands affected by the project to their pre-project state. Given the fact that the proposed project site is located on undeveloped land, staff anticipates that project decommissioning would have impacts similar in nature to proposed project construction activities. Therefore, given the temporary nature of decommissioning activities and the eventual return of the lands to their current state, the effects of decommissioning on land use is not expected to be adverse.

C.8.13 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

No Conditions of Certification/Mitigation Measures are proposed for the area of Land Use, Recreation, and Wilderness.

C.8.14 CONCLUSIONS

- No farmland or rangeland conversion impacts are expected as a result of the proposed project, and the project would not involve other changes in the existing environment which could result in conversion of farmland to non-agricultural uses.
- The proposed project would indirectly impact the recreational and wilderness values of the Cady Mountains WSA. However, due to the numerous wilderness and recreation areas throughout the county and in the vicinity of the project site, this indirect impact would not be adverse. .
- The proposed project would not contain or traverse any established BLM HAs or HMAs.
- The proposed project would not disrupt or divide the physical arrangement of an established community.
- The applicant has submitted an application to the BLM requesting a right-of-way (ROW) to construct the proposed project and its related facilities. Pursuant to the California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan are considered through the Plan Amendment process. Under Federal law, BLM is responsible for processing requests for ROWs to authorize such proposed projects and associated transmission lines and other appurtenant facilities on land it manages. If the ROW and proposed land use plan amendment are approved by BLM, the proposed solar thermal power plant facility on public lands would be authorized in accordance with Title V of the FLMPA of 1976 and the Federal Regulations at 43 CFR part 2800.
- Based on staff's independent review of applicable federal, state, and local LORS documents, the proposed project would not be consistent with a BLM Interim Policy prohibiting surface disturbing activities on LWCF lands within the proposed project boundaries. However, implementation of the two project alternatives (the Reduced Project Alternative and the Avoidance of Donated and Acquired Lands Alternative) would both avoid this LORS inconsistency.
- The implementation of renewable projects in Southern California would occur mostly in undeveloped desert lands or areas of rural development, and therefore, would not create physical divisions of established residential communities. Nonetheless, approximately one million acres of land are proposed for solar and wind energy development in the Southern California desert lands. Because the Calico Solar Project would have no impacts on agricultural resources, rangelands, horses and burros, it would have no potential to contribute to cumulative impacts in this respect. However, the proposed project would combine with other past and reasonably foreseeable future projects to substantially reduce scenic values of wilderness areas

and recreational resources in the Mojave Desert and southern California desert region and therefore, would result in a significant and unavoidable cumulative land use impact in this regard.

- The land use impacts associated with the Reduced Acreage Alternative would be similar to the proposed project, but less intense given that 67 percent less lands would be affected. In addition, this alternative would not result in the disturbance of LWCF mitigation lands, and therefore, would be in compliance with the BLM's Interim Policy Memorandum.
- The land use impacts associated with the Avoidance of Donated and Acquired Lands Alternative would be similar to the proposed project; however, this alternative would not result in the disturbance of LWCF mitigation lands, and therefore, would be in compliance with the BLM's Interim Policy Memorandum.

C.8.15 REFERENCES

- BLM 1980. U.S. Bureau of Land Management - California Desert Conservation (CDCA) Plan, 1980 as Amended.
- BLM 2009a. U.S. Bureau of Land Management – Interim Policy on Management of Donated Lands and Lands Acquired with Land and Water Conservation Funds (LWCF). May 28, 2009.
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C.9 – NOISE AND VIBRATION

Testimony of Erin Bright

C.9.1 SUMMARY OF CONCLUSIONS

California Energy Commission staff concludes that the Calico Solar Project (formerly the Stirling Energy Systems Solar One Project) can be built and operated in compliance with all applicable noise and vibration laws, ordinances, regulations, and standards and, if built in accordance with the conditions of certification proposed below, would produce no significant adverse noise impacts on people within the affected area, either direct, indirect, or cumulative.

C.9.2 INTRODUCTION

The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors combine to determine whether the facility would meet applicable noise control laws and ordinances and whether it would cause significant adverse environmental impacts under CEQA. In some cases, vibration may be produced as a result of power plant construction practices, such as blasting or pile driving. The groundborne energy of vibration has the potential to cause structural damage and annoyance.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the Calico Solar Project and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS) and to avoid creation of significant adverse noise or vibration impacts. For an explanation of technical terms and acronyms employed in this section, please refer to **Noise Appendix A** immediately following.

C.9.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (See Cal. Code Regs., tit. 14, Section 15063) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local General Plan or noise ordinance or applicable standards of other agencies;
2. exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;

3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying item 3 above to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by 5 dBA or more at the nearest sensitive receptor.

Staff considers it reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant. An increase between 5 and 10 dBA should be considered adverse, but may be either significant or insignificant, depending on the particular circumstances of the case.

Factors to be considered in determining the significance of an adverse impact as defined above include:

1. the resulting combined noise level;¹
2. the duration and frequency of the noise;
3. the number of people affected;
4. the land use designation of the affected receptor sites; and
5. public concern or controversy as demonstrated at workshops or hearings or by correspondence.

Noise due to construction activities is usually considered to be insignificant in terms of CEQA compliance if:

- the construction activity is temporary;
- use of heavy equipment and noisy activities are limited to daytime hours; and
- all industry-standard noise abatement measures are implemented for noise-producing equipment.

Staff uses the above method and threshold to protect the most sensitive populations.

¹ For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely be insignificant.

Laws, Ordinances, Regulations, and Standards

Noise Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal (OSHA): 29 U.S.C. § 651 et seq.	Protects workers from the effects of occupational noise exposure.
State (Cal/OSHA): Cal. Code Regs., tit. 8, §§ 5095–5099	Protects workers from the effects of occupational noise exposure.
Local San Bernardino County General Plan Noise Element San Bernardino County Development Code, Ch. 83.01	Establishes noise limits as specified in the Development Code (below) Establishes property line noise limits for various receiving uses. Exempts construction noise during certain hours. Establishes vibration limits.

FEDERAL

Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR § 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **NOISE Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

There are no federal laws governing off-site (community) noise.

The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB,² which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General

² VdB is the common measure of vibration energy.

Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are listed in **Noise Table 2**.

Noise Table 2
Land Use Compatibility for Community Noise Environment

LAND USE CATEGORY		COMMUNITY NOISE EXPOSURE – Ldn or CNEL (db)													
		50		5		60		65		70		75		80	
	Residential - Low Density Single Family, Duplex, Mobile Home														
	Residential - Multi-Family														
	Transient Lodging – Motel, Hotel														
	Schools, Libraries, Churches, Hospitals, Nursing Homes														
	Auditorium, Concert Hall, Amphitheaters														
	Sports Arena, Outdoor Spectator Sports														
	Playgrounds, Neighborhood Parks														
	Golf Courses, Riding Stables, Water Recreation, Cemeteries														
	Office Buildings, Business Commercial and Professional														
	Industrial, Manufacturing, Utilities, Agriculture														
	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.													
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.													
	Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.													
	Clearly Unacceptable	New construction or development generally should not be undertaken.													

Source: State of California General Plan Guidelines, Office of Planning and Research, June 1990.

The California Occupational Safety and Health Administration (Cal/OSHA) has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095–5099) that set employee noise exposure limits. These standards are

equivalent to the federal OSHA standards (see the **Worker Safety and Fire Protection** section of this document, and **Noise Appendix A, Table A4**).

LOCAL

San Bernardino County General Plan Noise Element

The San Bernardino County General Plan Noise Element establishes noise performance standards for stationary sources. These limits are those specified in the San Bernardino County Development Code (below).

San Bernardino County Development Code

Chapter 83.01 of the San Bernardino County Development Code sets noise performance standards for noise from stationary noise sources measured at the boundaries of noise-sensitive land uses. These limits are reproduced here as **Noise Table 3**. The Code stipulates an allowance to these limits if the measured ambient noise level exceeds any of the four noise limit categories, such that “the allowable noise exposure standard shall be increased to reflect the ambient noise level” (COSB 2007b, § 83.01.080[e]).

Noise Table 3
Noise Standards for Stationary Noise Sources

Noise Level (dBA L _{eq})		
Receiving Land Use Category	7:00 a.m. to 10:00 p.m.	10:00 p.m. to 7:00 a.m.
Residential	55	45
Professional Services	55	55
Other Commercial	60	60
Industrial	70	70

Source: COSB 2007b, Ch. 83.01, Table 83-2

Construction noise is exempt from these limits between the hours of 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays (COSB 2007b, § 83.01.080[g][3]).

Vibration is limited to that which cannot be felt without the aid of instruments at or beyond the lot line, and that which does not produce a particle velocity greater than or equal to 0.2 inches per second at the lot line (COSB 2007b, § 83.01.090[a]).

Construction vibration is exempt from this limit between the hours of 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays (COSB 2007b, § 83.01.090[c][2]).

Note that, since the project will be built on federally owned land, these San Bernardino County LORS do not apply. They are listed here solely as guidelines.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The analysis of proposed project effects must comply with both CEQA and NEPA requirements given the respective power plant licensing and land jurisdictions of the California Energy Commission and U.S. Bureau of Land Management (BLM). CEQA

requires that the significance of individual effects be determined by the Lead Agency; however, the use of specific significance criteria is not required by NEPA.

Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws.

CEQA identifies criteria that may be used to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (State CEQA Guidelines Section 15382).

In comparison, NEPA states that “‘Significantly’ as used in NEPA requires considerations of both context and intensity...” (40 CFR 1508.27). Therefore, thresholds serve as a benchmark for determining if a project action will result in a significant adverse environmental impact when evaluated against the baseline. NEPA requires that an Environmental Impact Statement (EIS) is prepared when the proposed federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.”

Thresholds for determining significance in this section are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by the Energy Commission staff. In addition, staff’s evaluation of the environmental effects of the proposed project on land uses (i.e., those listed below) includes an assessment of the context and intensity of the impacts, as defined in the NEPA implementing regulations 40 CFR Part 1508.27.

Effects of the proposed project on noise and vibration (and in compliance with both CEQA and NEPA) have been determined using the thresholds listed below.

C.9.4 PROPOSED PROJECT

C.9.4.1 SETTING AND EXISTING CONDITIONS

The Calico Solar Project (Calico Solar) would be constructed on an 8,230 acre site located in San Bernardino County, approximately 37 miles east of the city of Barstow. The site is on undisturbed public land managed by the BLM (SES 2008a, AFC §§ 3.2, 3.3.1).

The ambient noise regime in the project vicinity consists of train traffic, highway traffic, aircraft traffic, wind and wildlife. The nearest sensitive receptor is a single residence, designated SR1, located approximately 1,200 feet from the project’s southwest border. A second sensitive receptor, a residence designated SR2, is located approximately 7,800 feet east of the project boundaries. (SES 2008a, AFC 5.12.1.1, Figure 5.12-1).

Ambient Noise Monitoring

In order to establish a baseline for comparison of predicted project noise to existing ambient noise, the applicant has presented the results of an ambient noise survey (SES 2008a, AFC § 5.12.1.4, Appendix CC-3, Tables CC-3-1 through CC-3-3; SES 2009i,

DR68, Table DR68-1). The survey was conducted from November 2 to November 7, 2008, and monitored existing noise levels at the following locations, shown on **Noise and Vibration Figure 1**:

1. Measuring Location 3 (LT3): Near the residence located approximately 1,200 feet south-west of the project site, to the south of Route 66 and west of Hector Road, designated SR1. This is the sensitive receptor closest to the project site. Long-term (25 hour) monitoring showed elevated ambient noise levels consistent with the receptor's proximity to the nearby rail lines and highway.
2. Measuring Location 4 (LT4): Near an abandoned corral west of the project site. Long-term monitoring (18 hour) showed ambient noise levels consistent with a rural environment.

Ambient noise measurements were not taken at the second sensitive receptor, a residence located approximately 7,800 feet east of the project site and 5300 feet north of the rail line and Interstate 40, designated SR2 in **Noise and Vibration Figure 1**. On the basis of comparable noise conditions such as noise source proximity and exposure, ambient noise at this receptor is likely similar to that at measuring location LT4 (SES 2009i, DR 68). Energy Commission staff has chosen to analyze project noise impacts at SR2 using the ambient noise data from LT4 as a proxy measurement.

Noise Table 4 summarizes the ambient noise measurements:

Noise Table 4
Summary of Measured Ambient Noise Levels

Measurement Location	Measured Noise Levels, dBA		
	L_{eq} – Daytime ¹	L_{eq} – Nighttime ²	L_{90} – Nighttime ³
LT3/SR1	65	63	47
LT4/SR2	41	38	35

Source: SES 2008a AFC Appendix CC-3, Tables CC-3-1 through CC-3-3; SES 2009i table DR68-1

¹ Staff calculations of average of 15 daytime hours

² Staff calculations of average of 9 nighttime hours

³ Staff calculations of average of 4 consecutive quietest hours of the nighttime

C.9.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by short-term construction activities and by normal long-term operation of the power plant.

Construction Impacts and Mitigation

Construction noise is usually considered a temporary phenomenon. Construction of Calico Solar is expected to occur in two phases over a period of 41 to 48 months. Phase I would be constructed first, on the eastern half of the project site; Phase II would subsequently be constructed on the western half of the project site (SES 2008a, AFC § 5.12.2.1).

Compliance with LORS

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances.

The applicant has predicted the noise impacts of project construction on the nearest sensitive receptors (SES 2008a, AFC § 5.12.2.1, Tables 5.12-4 and 5.12-5). Assembly and installation of solar collectors (Sun Catchers) for the project is expected to be performed in blocks around the site with additional, more substantial structural construction taking place at the Main Services Complex centrally located on the site. The applicant has estimated that the noise resulting from construction of the collector block closest to the receptor south of the project border, SR1, would be no more than 74 dBA at the receptor. Similarly, noise resulting from the construction of the collector blocks closest to location SR2 would be no more than 60 dBA. A maximum construction noise level for all other project construction (such as roads and buildings) is estimated to be no more than 55 dBA L_{eq} at SR1, and 58 dBA L_{eq} at SR2. Overall construction noise would, therefore, be no more than 74 dBA at location SR1 and 62 dBA at location SR2 (SES 2008a, AFC § 5.12.2.1, Tables 5.12-4 and 5.12-5; and staff calculations). A comparison of construction noise estimates to measured ambient conditions is summarized in **Noise Table 5**.

Noise Table 5
Predicted Power Plant Construction Noise Impacts

Receptor	Highest Construction Noise Level ¹ (dBA L_{eq})	Measured Existing Ambient ² (dBA L_{eq})	Cumulative (dBA L_{eq})	Change (dBA)
SR1 – South Residence	74	65 daytime	75 daytime	+10 daytime
		63 nighttime	74 nighttime	+11 nighttime
SR2 – East Residence	62	41 daytime	62 daytime	+21 daytime
		38 nighttime	62 nighttime	+24 nighttime

1 Source: SES 2008a, AFC § 5.12.2.1, Tables 5.12-4 and 5.12-5; and staff calculations

2 Source: SES 2008a, AFC Appendix CC-3, Tables CC-3-1 through CC-3-3; and staff calculations of average of daytime and nighttime hours.

The San Bernardino County Development Code limits noise levels at residential receptors to no more than 55 dBA L_{eq} . The Code exempts construction noise from these limits during the daytime hours of 7:00 a.m. to 7:00 p.m. except Sundays and federal holidays. To ensure that these hours are, in fact, enforced, staff proposes Condition of Certification **NOISE-6**.

Compliance with **NOISE-6** would insure that the noise impacts of Calico Solar Project construction activities would comply with the local noise LORS.

CEQA Impacts

Power Plant Site

To evaluate construction noise impacts, staff compares the projected noise levels to the ambient. Since construction noise typically varies continually with time, it is most appropriately measured by, and compared to, the L_{eq} (energy average) metric.

The applicant estimates that construction of the Calico Solar Project would take place in two phases over a period of 41 to 48 months, which is significantly longer than the 12 to 16 month construction period of a traditional power plant. However, the construction of the Calico Solar Project would be conducted modularly, each module taking approximately 4 months to construct. Thus, maximum construction noise would occur during the construction of the module closest to the receptor for a duration of 4 months and would decrease as construction activity moved on to the next module, further from the receptor. Construction for the Calico Solar Project would therefore still constitute a temporary noise impact.

Aggregate construction noise may be expected to reach levels as high as 62 dBA L_{eq} at the sensitive receptor east of the project, SR2, for a period of approximately 4 months; an increase of 21 dBA during daytime hours (see **Noise Table 5**, above). Such an increase represents a quadrupling of noise level at the receptor and would generally be considered a significant impact. The projected construction noise levels, however, are most likely conservative, calculated from manufacturers' estimated data and engine power sound generation formulae; actual noise levels may be less than predicted. Since noisy construction work will be restricted to daytime hours, staff believes it will be noticeable, but tolerable, at the nearest residences.

The increase of construction noise over nighttime ambient noise levels at SR2 would be approximately 24 dBA. Such an increase represents more than a quadrupling in noise level, and at night, when people are sleeping, would clearly prove annoying. However, the schedule constraints on construction presented by the San Bernardino County Development Code and Condition of Certification **NOISE-6** further enforcing these constraints, would result in less than significant adverse impacts at the most noise-sensitive receptors.

In the event that actual construction noise should annoy nearby residents, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a Notification Process to make nearby residents aware of the project, and a Noise Complaint Process that requires the applicant to resolve any problems caused by noise from the project.

Linear Facilities

Linear facilities include new electrical transmission lines interconnecting a proposed new onsite substation to the transmission system on the project's eastern boundary. The transmission lines would extend past the project site boundaries only minimally and would not pass any sensitive receptors (SES 2008a, AFC Figure 5.12-1). While construction noise levels for linears would be noticeable, construction on linears proceeds rapidly, so no particular area is exposed to noise for more than a few days.

Pile Driving

The applicant does not explicitly state that pile driving would be necessary for construction of the Calico Solar Project, however staff has analyzed the potential noise impacts of pile driving in case it is found necessary during the construction process. If pile driving is required for construction of the project, the noise from this operation could be expected to reach 104 dBA at a distance of 50 feet. Pile driving noise would thus be projected to reach levels of 76 dBA at SR1 and 60 dBA at SR2 (staff calculation). Added to the existing daytime ambient levels of 65 and 41 dBA L_{eq} at SR1 and SR2, respectively, this would combine to produce an increase of 11 dBA over ambient noise levels at SR1 and 19 dBA over ambient at SR2 (see **Noise Table 6**, below). While this would produce a noticeable impact, staff believes that limiting pile driving to daytime hours, in conjunction with its temporary nature, would result in impacts tolerable to residents. Staff proposes Condition of Certification **NOISE-6** to ensure that pile driving noise, should it occur, would be limited to daytime hours.

**Noise Table 6
Pile Driving Noise Impacts**

Receptor	Pile Driving Noise Level (dBA L_{eq})	Daytime Ambient Noise Level (dBA L_{eq})	Cumulative Level (dBA)	Change (dBA)
SR1	76	65	76	+11
SR2	60	41	60	+19

1 Source: SES 2008a, AFC Appendix CC-3, Tables CC-3-1 through CC-3-3; SES 2009i, DR 68; and staff calculations

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving, should it be employed. Vibration attenuates rapidly; it is likely that no vibration would be perceptible at any appreciable distance from the project site. Staff therefore believes there would be no significant impacts from construction vibration.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized those applicable LORS that would protect construction workers (SES 2008a, AFC § 5.12.2.1). To ensure that construction workers are, in fact, adequately protected, staff has proposed Condition of Certification **NOISE-3**, below.

Operation Impacts and Mitigation

The primary noise sources of the Calico Solar Project would consist of the reciprocating Stirling Engines (including generator, cooling fan and air compressor) utilized on each of the Sun Catchers that make up the project, as well as step-up transformers and a new substation (SES 2008a, AFC § 3.4.4.1, 5.12.2.2). Staff compares the projected noise with applicable LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

Compliance with LORS

The applicant performed noise modeling to determine the project's noise impacts on sensitive receptors (SES 2008a, AFC § 5.12.2.2, Table 5.12-7; Data Response 68, Table DR68-1).

As seen in **Noise Table 7**, the project's operational noise level at the nearest sensitive receptor would be no more than 57 dBA L_{eq} . While this value exceeds the noise level limits specified in the San Bernardino County Development Code (55 dBA L_{eq} for residential receptors), it follows the stipulated allowable increase in noise level given that the measured ambient level at that receptor (65 dBA L_{eq}) is greater than the stated limit, and is thus in compliance. The project's operational noise at the second sensitive receptor is below the specified LORS limit.

Noise Table 7
Plant Operating Noise LORS Compliance

Receptor	LORS	LORS Limit	Projected Noise Level (CNEL)
SR1	San Bernardino County Development Code	65 dBA L_{eq} , Existing Daytime Ambient	57 dBA
SR2		55 dBA L_{eq} , LORS Daytime Requirement	52 dBA

Source: San Bernardino County 2007, and AFC Table 5.12-7.

CEQA Impacts

Power plant noise is unique. Essentially, a power plant operates as a steady, continuous, broadband noise source, unlike the intermittent sounds that comprise the majority of the noise environment. As such, power plant noise contributes to, and becomes part of, the background noise level, or the sound heard when most intermittent noises cease. Where power plant noise is audible, it will tend to define the background noise level. For this reason, staff compares the projected power plant noise to the existing ambient background (L_{90}) noise levels at the affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be incorporated in the project to reduce or remove the impact.

In many cases, a power plant will be intended to operate around the clock for much of the year. As a solar thermal generating facility, the Calico Solar Project would operate only during daytime hours, typically 15 hours per day during the summer (with fewer hours during the fall, winter, and spring), when sufficient solar insolation is available.

Typically, daytime ambient noise consists of both intermittent and constant noises. The noise that stands out during this time is best represented by the average noise level, or L_{eq} . Staff's evaluation of the above noise surveys shows that the daytime noise environment in the Calico Solar Project area consists of both intermittent and constant noises. Thus, staff compares the project's daytime noise levels to the daytime ambient L_{eq} levels at the project's noise-sensitive receptors.

As seen in **Noise Table 8**, power plant noise levels are predicted to be no greater than 57 dBA L_{eq} and 52 dBA L_{eq} at receptors SR1 and SR2, respectively, during daytime operation.

Noise Table 8
Power Plant Noise Impacts at Nearest Sensitive Receptors

Location	Power Plant Noise Level, dBA L_{eq}¹	Ambient Noise Level, dBA L_{eq}²	Cumulative Noise Level, dBA	Change from Ambient Level dBA
SR1	57	65	66	+1
SR2	52	41	52	+11

¹ Source: SES 2008a AFC Table 5.12-7; and staff calculations.

² Source: SES 2008a, AFC Appendix CC-3, Tables CC-3-1 through CC-3-3; SES 2009i, DR 68, table DR68-1; and staff calculations of average of fifteen consecutive daytime hours.

When projected plant noise is added to the daytime ambient value (as calculated by staff), the cumulative level is higher than the ambient value at location SR1 by an inaudible amount (see **Noise Table 8**). The cumulative level at location SR2 is considerably higher, more than 10 dBA, than the ambient value and is thus considered a significant impact. No change in ambient noise at any sensitive receptor at night would result from plant operation.

Because project operating noise would only occur during daytime hours, staff considers an increase of 10 dBA or less to be a less than significant impact. In order for the cumulative level to be no more than 10 dBA over ambient at SR2, the project noise alone must not exceed 51 dBA at location SR2. Thus, the applicant's predicted noise level of 52 dBA must be reduced to 51 dBA, at SR2. Staff proposes Condition of Certification **NOISE-4** to ensure that the project does not exceed the noise levels specified above.

Tonal Noises

One possible source of disturbance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. The applicant can avoid the creation of annoying tonal (pure-tone) noises by balancing the noise emissions of various power plant features during plant design. To ensure that tonal noises do not cause annoyance, staff proposes Condition of Certification **NOISE-4**, below.

Linear Facilities

Noise effects from the electrical interconnection line typically do not extend beyond the right-of-way easement of the line and would thus be inaudible to any receptors.

Vibration

Vibration from an operating power plant could be transmitted by two chief means; through the ground (groundborne vibration) and through the air (airborne vibration).

The Calico Solar Project would be essentially comprised of a large number of solar dish generators, the operating components of each consisting of a relatively small

reciprocating engine, cooling fans and air compressor. All of these pieces of equipment must be carefully balanced in order to operate. Given the distributive layout of the project, Energy Commission staff believes that the ground borne vibration from the Calico Solar Project would be undetectable by any likely receptor.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves and can rattle the walls of lightweight structures. None of the project equipment is likely to produce low frequency noise; this makes it highly unlikely that the Calico Solar Project would cause perceptible airborne vibration effects.

Worker Effects

The applicant has acknowledged the need to protect plant operating and maintenance workers from noise hazards and has committed to comply with applicable LORS (SES 2008a, AFC § 5.12.2.2). To ensure that plant operation and maintenance workers are, in fact, adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-5**, below.

C.9.4.3 CEQA LEVEL OF SIGNIFICANCE

For the purposes of CEQA compliance, the significance of construction and operating noise impacts of the proposed project at the nearest sensitive receptors has been determined.

Construction Impacts

As discussed in detail in section C10.4.2 above (under the subsection entitled “Construction Impacts and Mitigation”), the noise level increase at the nearest sensitive receptors resulting from construction of the project (presented in **Noise Table 5**) would be noticeable. However, given the temporary nature of construction noise and the fact that noisy construction activity would be restricted to daytime hours (by both the local LORS and Condition of Certification **NOISE-6**), the impacts due to construction noise are considered less than significant.

Operation Impacts

As discussed in detail in section C10.4.2 above (under the subsection entitled “Operation Impacts and Mitigation”), power plant noise levels are predicted to be less than 52 dBA L_{eq} at receptor SR2 and 57 dBA L_{eq} at receptor SR1 during daytime operation. This would result in an increase of 11 dBA over ambient noise at location SR2, which is considered significant. Staff proposes Condition of Certification **Noise-4** to bring project noise impacts down to 51 dBA at SR2, which, given that operation would only occur during daytime hours, is considered less than significant.

C.9.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage alternative would essentially be a 275 MW solar facility located within the boundaries of Phase 2 of the proposed 850 MW project. This alternative and alternative locations of the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 1**.

C.9.5.1 SETTING AND EXISTING CONDITIONS

The reduced acreage alternative would consist of approximately one third as many SunCatchers (11,000 machines), producing 32% as much power (275 MW) and occupying 40% as much land as the proposed project. The project boundary for the alternative would be approximately 2,000 feet further away from SR2, the sensitive receptor that would be most impacted by noise from the proposed project.

C.9.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Given the distributive nature of the operational noise produced by the chosen project technology, the 275 MW alternative would most likely correspond to lower operational noise impacts at the noise receptor located east of the project, SR2; a receptor that faces significant, though mitigable, noise impacts from the proposed project. Operational noise impacts at the receptor south of the project would likely be the same as that of the 850 MW project. Certainly, the noise impacts of the 275 MW alternative would not be greater than the noise impacts from the proposed 850 MW project.

C.9.5.3 CEQA LEVEL OF SIGNIFICANCE

The CEQA Level of Significance of the 275 MW alternative would be unchanged from the proposed project.

C.9.6 AVOIDANCE OF DONATED AND ACQUIRED LANDS ALTERNATIVE

The Avoidance of Donated and Acquired Lands Alternative would be an approximately 720 MW solar facility located within the boundaries of the proposed 850 MW project. This alternative, the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 2**.

C.9.6.1 SETTING AND EXISTING CONDITIONS

Like the proposed project, this alternative would include numerous groups of 60 Sun Catchers, connected by underground electrical cables. When aggregated at the project substation, the power generated would interconnect to SCE's existing Pisgah 230 kV substation which is located in San Bernardino County approximately 35 miles east of Barstow, California. There would be fewer Sun Catcher groups in this alternative, but the system of aggregation and method of power transmission would be the same as for the proposed project.

C.9.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The Avoidance of Donated and Acquired Lands Alternative would consist of 28,800 SunCatchers with a net generating capacity of approximately 720 MW occupying the entire proposed project footprint but avoiding use of any lands that were donated to BLM or acquired by BLM through the Land and Water Conservation Fund program. Like the proposed project, this alternative would transmit power to the grid through the SCE

Pisgah Substation and would require infrastructure similar to the entire proposed 850 MW project, including water storage tanks, transmission line, road access, main services complex, and substation. Additionally, like the proposed project, the Avoidance of Donated and Acquired Lands Alternative would require the 65-mile upgrade to the SCE Lugo-Pisgah transmission line.

The Avoidance of Donated and Acquired Lands Alternative would use approximately 85% of the Sun Catchers, provide 85% of the power generating potential, and would affect approximately 86% of the land (7,050 acres) of the proposed 850MW project. This alternative would require fewer Sun Catcher groups to generate 275 MW. Therefore, it would require fewer distribution facilities and a smaller substation to be built within the project site.

The noise impacts of this alternative on the nearest noise sensitive receptors could potentially be lower than the impacts of the proposed project, depending on the specific placement of the Sun Catchers. Given that the number of Sun Catchers would be fewer and would be contained in the same project boundaries, the noise impacts to nearby sensitive receptors would likely not be greater than the impacts of the proposed project.

C.9.6.3 CEQA LEVEL OF SIGNIFICANCE

The level of significance under CEQA for the Avoidance of Donated and Acquired Lands Alternative would be the same as for the proposed project.

C.9.7 NO PROJECT / NO ACTION ALTERNATIVES

There are three No Project / No Action Alternatives evaluated as follows:

No Project / No Action Alternative #1: No Action on the Calico Solar Project application and on CDCA land use plan amendment

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

The results of the No Project / No Action Alternative would be the following:

- The noise impacts of the proposed project would not occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another renewable energy project.
- The benefits of the proposed project in displacing fossil fuel fired generation and reducing associated greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

If the proposed project is not approved, renewable projects would likely be developed on other sites in San Bernardino County, the Mojave Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and

State/Federal mandates. For example, there are dozens of other wind and solar projects that have applications pending with BLM in the California Desert District.

No Project / No Action Alternative #2: No Action on the Calico Solar Project and amend the CDCA land use plan to make the area available for future solar development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

The noise impacts of the proposed project would not occur under this No Project Alternative. If another solar project were constructed at the site, noise impacts could potentially occur; however, without project specific data (such as the type of technology that would be used), staff cannot determine what those noise impacts might be.

No Project / No Action Alternative #3: No Action on the Calico Solar Project application and amend the CDCA land use plan to make the area unavailable for future solar development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. The noise impacts of the proposed project would not occur under this No Project Alternative.

C.9.8 PROJECT-RELATED FUTURE ACTIONS

This section examines the potential impacts of future transmission line construction, line removal, substation expansion, and other upgrades that may be required by Southern California Edison Company (SCE) as a result of the Calico Solar Project. The SCE upgrades are a reasonably foreseeable event if the Calico Solar Project is approved and constructed as proposed.

The SCE project will be fully evaluated in a future EIR/EIS prepared by the BLM and the California Public Utilities Commission. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information. The purpose of this analysis is to inform the Energy Commission and BLM, interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the Calico Solar Project.

The project components and construction activities associated with these future actions are described in detail in Section B.3 of this Staff Assessment/EIS. This analysis examines the construction and operational impacts of two upgrade scenarios

- The **275 MW Early Interconnection Option** would include upgrades to the existing SCE system that would result in 275 MW of additional latent system capacity. Under the 275 MW Early Interconnection option, Pisgah Substation would be expanded adjacent to the existing substation, one to two new 220 kV structures would be constructed to support the transmissions interconnection (gen-tie) from the Calico Solar Project into Pisgah Substation, and new telecommunication facilities would be installed within existing SCE Right of Ways (ROWs).
- The **850 MW Full Build-Out Option** would include replacement of a 67-mile 220 kV SCE transmission line with a new 500 kV line, expansion of the Pisgah Substation at a new location and other telecommunication upgrades to allow for additional transmission system capacity to support the operation of the full Calico Solar Project.

C.9.8.1 ENVIRONMENTAL SETTING

The environmental setting described herein incorporates both the 275 MW Early Interconnection and the 850 MW Full Build-Out options. The setting for the 275 MW Early Interconnection upgrades at the Pisgah Substation and along the telecomm corridors is included within the larger setting for the project area under the 850 MW Full Build-Out option, which also includes the Lugo-Pisgah transmission corridor.

Noise is the general term given to unwanted sound. Sound is measured in units of decibels (dB), which is a logarithmic measure of sound power. Sound measurements are corrected to provide an approximate measure of normal human hearing. The correction to sound measurement is called the A-weighted decibel (dBA) scale. This scale provides a general correlation to a human's sensing of noise under normal circumstances. Noise control is regulated for two main purposes, the first is to control public nuisance associated with excessive noise in the public environment. The second control is for worker safety associated with chronic noise exposure that may cause permanent damage to an individual's hearing.

The levels of noise in a given environment are dependent on the amount of human activity and the environmental conditions present. The SCE upgrades project area contains a broad range of environmental conditions, ranging from the urban conditions present in Hesperia at the west end of the project area near Lugo Substation, to undeveloped areas, such as the Ordman and Roman mountain areas in the central and eastern sections of the project area. Typical noise levels for these areas may range from 70 dBA in an urban setting to 35 dBA in a rural setting (CSU 2009).

C.9.8.2 ENVIRONMENTAL IMPACTS

Construction of the upgrades and tower removal would require short-term use of heavy-duty equipment such as trenchers, excavators, drill rigs, cranes, and trucks. Although the new ROW has not been finalized, residences would be located nearby to the transmission line ROW near the Hesperia area. In general, construction work within 200

feet of any location would cause noise levels averaging around 65 dBA, with intermittent peaks up to about 88 dBA. This would be a noticeable (more than 5 dBA) temporary increase in the ambient noise levels near the work that would fade into quiet background noise at distances over one-quarter mile. Although construction noise would be required to comply with local ordinances, it may still be disruptive. The 275 MW Early Interconnection upgrades would be located entirely in rural areas (except for work at the southwestern end of the OPGW installation on Eldorado – Lugo 500 kV transmission line), would have a reduced scope of construction activities, and would occur over a shorter duration than the 850 MW Full Build-Out option.

Project construction activities may last up to 24 months for the 850 MW Full Build-Out option, with activities generally progressing along the length of the transmission and telecomm ROW alignments and around the expanded Pisgah Substation. Noise levels during construction in any given area would increase above background levels. The level of increase would be dependent on the background levels present in the area and the level of activity. Noise levels would vary based on the type of activity occurring and the associated equipment in operation to perform a given task.

Normal operation of the transmission line would include routine inspection of the line and possible repair and maintenance activities. These activities would create short-term increases in noise levels, depending on the level of activity. After installation of the new 500 kV line is complete and the line operational, there may be a change in corona noise levels. Corona noise is a function of the line voltage and the condition of the line. The voltage would be increased, but the condition of the line would be improved, so the net change in corona noise may be minor.

In areas of the new ROW, the proposed 500 kV transmission line would cause a permanent noise increase due to the corona effect. The precise location of highest possible corona noise cannot be known until after commencing operation. This is because conductor surface defects, damage, and inconsistencies influence corona. Because the approximately 10 miles of new ROW would be in more developed areas with higher ambient noise, it is likely that the resulting overhead transmission line noise would not violate any local standards or cause a substantial (more than 5 dBA) noise increase for any nearby noise-sensitive receptor.

C.9.8.3 MITIGATION

Implementation of mitigation measures similar to the proposed Conditions of Certification from the Calico Solar Project Staff Assessment/EIS are recommended to minimize potential impacts and adhere to all permit conditions. These conditions would require notification of affected residents of impending construction, establishing a noise complaint resolution process, and limiting noisy construction to daytime hours.

Implementation of mitigation that would require all vehicles and equipment to be equipped with exhaust noise abatement devices, such as sound mufflers, and would require landowner notification are also recommended. To minimize disturbance, mitigation should also be implemented that would limit work to daytime hours and institute timing control for all activities that are known to have high noise levels.

In order to reduce impacts from corona noise, especially to areas around the new 500 kV ROW, SCE should be required to respond to third-party complaints of corona noise generated by operation of the transmission line by investigating the complaints and by implementing feasible and appropriate measures (such as repair damaged conductors, insulators, or other hardware). As part of SCE's repair inspection and maintenance program, the transmission line should be patrolled, and damaged insulators or other transmission line materials, which could cause excessive noise, should be repaired or replaced.

C.9.8.4 CONCLUSION

Implementing mitigation measures discussed above and similar to the Conditions of Certification that are proposed in the Staff Assessment/DEIS for construction of the Calico Solar Project would likely avoid potential significant noise impacts from work associated with the SCE upgrades.

C.9.9 CUMULATIVE IMPACT ANALYSIS

Geographic Extent

The geographic scope for considering cumulative noise impacts on sensitive receptors for this project is the region immediately surrounding those receptors identified in the project application.

Existing Cumulative Conditions

Any existing cumulative noise conditions are included in the existing ambient noise survey conducted at the sensitive receptors.

Future Foreseeable Projects

Foreseeable Projects in the Newberry Springs/Ludlow Area

The applicant has identified two additional potential projects in the vicinity of Calico Solar that might propose a potential for cumulative noise impacts. The applicant plans to propose an additional solar project (SES Solar Three) northwest of the Calico Solar project site and a wind power facility has been proposed to the east of the Calico Solar project site. Since the potential solar project would be located on the opposite side of the Calico Solar project site from the identified noise sensitive receptors, a significant cumulative impact from that project would not be expected. Noise data from the proposed wind power facility are not available for a cumulative impacts assessment; further analysis would be necessary as data becomes available (SES 2008a, AFC § 5.12.3).

Foreseeable Renewable Projects in the California and Arizona Desert

Additional projects outside the immediate vicinity of Calico Solar would not pose a potential for cumulative noise impacts.

C.9.10 COMPLIANCE WITH LORS

Compliance with LORS is discussed in section C.9.4.2 above.

C.9.11 NOTEWORTHY PUBLIC BENEFITS

Staff has not identified and noteworthy public benefits to noise and vibration from the proposed Calico Solar Project.

C.9.12 FACILITY CLOSURE

In the future, upon closure of the Calico Solar Project, all operational noise from the project would cease, and no further adverse noise impacts from operation of the Calico Solar Project would be possible. The remaining potential temporary noise source is the dismantling of the structures and equipment and any site restoration work that may be performed. Since this noise would be similar to that caused by the original construction, it can be treated similarly. That is, noisy work could be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise LORS that were in existence at that time would apply. Applicable conditions of certification included in the Energy Commission decision would also apply unless modified.

C.9.13 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within 2 miles of the site, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;
- Take all feasible measures to reduce the noise at its source if the noise is project related; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts, and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within 5 days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 3-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.

NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone to exceed an average of 51 dBA L_{eq} measured at or near monitoring location SR2, and an average of 57 dBA L_{eq} measured at or near monitoring location SR1.

No new pure-tone components shall be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

- A. When the project first achieves a sustained output of 85% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location SR2, or at a closer location acceptable to the

CPM. This survey shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the project.

During the period of this survey, the project owner shall also conduct a short-term survey of noise at monitoring location SL1 or at a closer location acceptable to the CPM. The short-term noise measurements at this location shall be conducted during morning, early afternoon, and evening hours.

The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the CPM, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

- B. If the results from the noise survey indicate that the power plant noise at the affected receptor sites exceeds the above specified values, mitigation measures shall be implemented to reduce noise to a level of compliance with these limits.
- C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 30 days of the project first achieving a sustained output of 85% or greater of rated capacity. Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limit, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-5 Following the project's first achieving a sustained output of 80% or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations sections 5095–5099 and Title 29, Code of Federal Regulations section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal/OSHA upon request.

CONSTRUCTION TIME RESTRICTIONS

NOISE-6 Heavy equipment operation, including pile driving, and noisy construction work relating to any project features shall be restricted to the times of day delineated below, unless a variance has been issued by San Bernardino County for limited nighttime construction:

Mondays through Saturdays: 7:00 a.m. to 7:00 p.m.

Sundays and Holidays: No Construction Allowed

Haul trucks and other engine-powered equipment shall be equipped with mufflers that meet all applicable regulations. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project. Prior to ground disturbance, a copy of the variance issued by the county, if one should be issued, shall be submitted to the CPM for review and approval.

C.9.14 CONCLUSIONS

Staff concludes that the Calico Solar Project, if built and operated in conformance with the proposed conditions of certification, would comply with all applicable noise and vibration LORS and would produce no significant adverse noise impacts on people within the project area, directly, indirectly, or cumulatively.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Calico Solar Project (08-AFC-13)		
NOISE COMPLAINT LOG NUMBER _____		
Complainant's name and address: 		
Phone number: _____		
Date complaint received: _____ Time complaint received: _____		
Nature of noise complaint: 		
Definition of problem after investigation by plant personnel: 		
Date complainant first contacted: _____		
Initial noise levels at 3 feet from noise source _____	dBA	Date: _____
Initial noise levels at complainant's property: _____	dBA	Date: _____
Final noise levels at 3 feet from noise source: _____	dBA	Date: _____
Final noise levels at complainant's property: _____	dBA	Date: _____
Description of corrective measures taken: 		
Complainant's signature: _____		Date: _____
Approximate installed cost of corrective measures: \$ _____		
Date installation completed: _____		
Date first letter sent to complainant: _____		(copy attached)
Date final letter sent to complainant: _____		(copy attached)
This information is certified to be correct: 		
Plant Manager's Signature: _____		

(Attach additional pages and supporting documentation, as required).

C.9.15 REFERENCES

San Bernardino 2007. San Bernardino County General Plan.

San Bernardino County 2007. San Bernardino County Development Code, Title 8, Division 3, Chapter 83.01, Section 80: Noise. Effective April 12, 2007.

SES 2008a – Stirling Energy Systems/R. Liden (tn: 49181). Application for Certification, dated December 1, 2008. Submitted to CEC/Docket Unit on December 1, 2008.

SES 2009i - Stirling Energy Systems/C. Champion (tn: 52466). Applicant's Responses to Energy Commission and Bureau of Land Management's Data Requests Set 1, Part 1, dated July 17, 2009. Submitted to CEC/Docket Unit on July 20, 2009.

NOISE APPENDIX A

FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that “A-weighting” of sound intensities best reflects the human ear’s reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **Noise Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, those higher levels nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about 7 decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (U.S. Environmental Protection Agency, Effects of Noise on People, December 31, 1971).

To help the reader understand the concept of noise in decibels (dBA), **Noise Table A2** illustrates common noises and their associated sound levels, in dBA.

Noise Table A1
Definition of Some Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L ₁₀ , L ₅₀ , & L ₉₀	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L ₉₀ is generally taken as the background noise level.
Equivalent Noise Level, L _{eq}	The energy average A-weighted noise level during the noise level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L _{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, [Model Community Noise Control Ordinance](#), California Department of Health Services 1976, 1977.

Noise Table A2
Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of 1 dB cannot be perceived.
2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.
3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3-dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus 3 dB). **Noise Table A3** indicates the rules for decibel addition used in community noise prediction.

Noise Table A3
Addition of Decibel Values

When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988.

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by 6 dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure and list permissible noise level exposure as a function of the amount of time to which the worker is exposed, as shown in **Noise Table A4**.

Noise Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

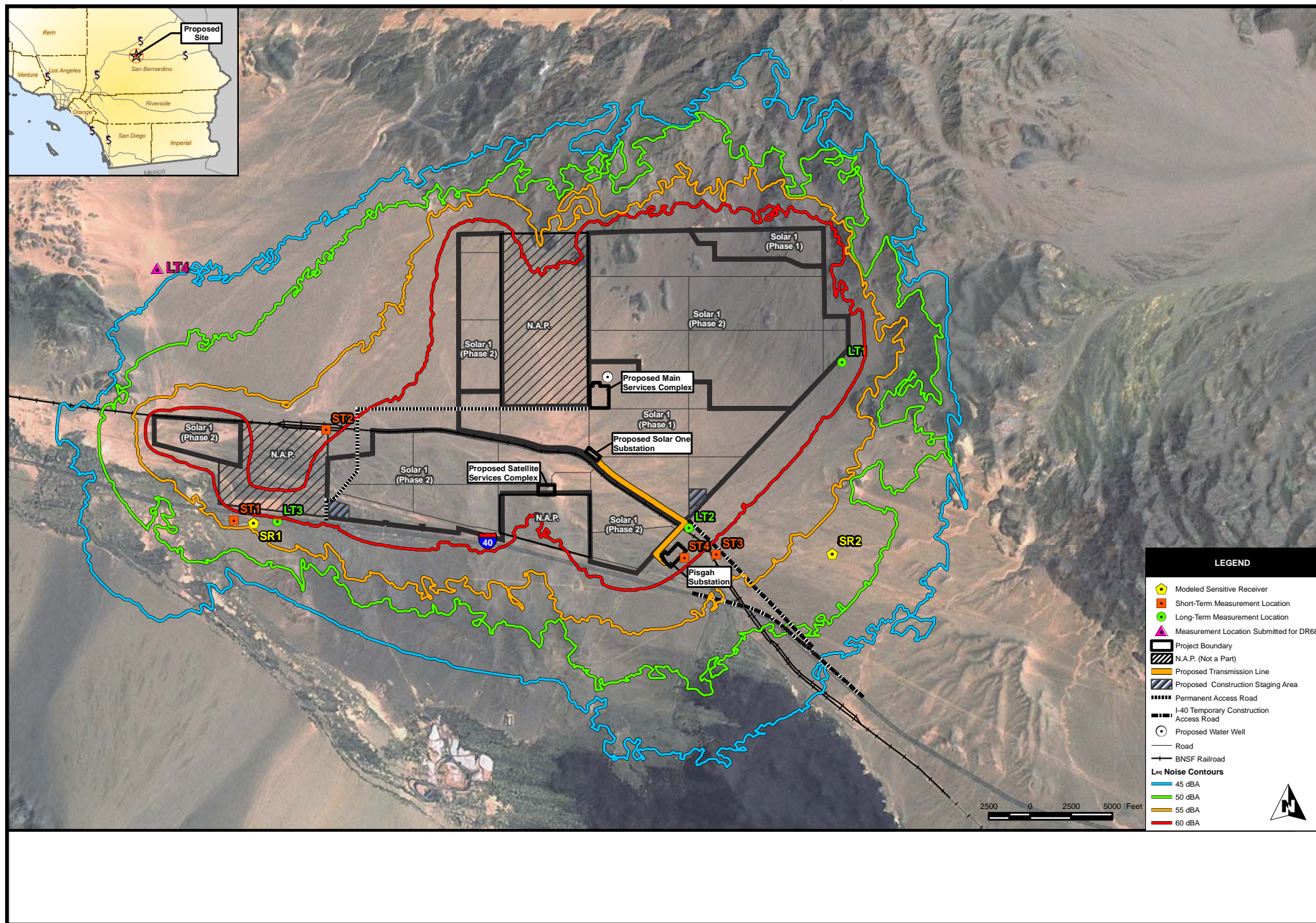
Source: 29 CFR § 1910.95.

NOISE AND VIBRATION - FIGURE 1

Calico Solar Project - Sound Measurement Location and L_{eq} Noise Contours

MARCH 2010

NOISE AND VIBRATION



C.10 – SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Testimony of Kristin Ford

C.10.1 SUMMARY OF CONCLUSIONS

Energy Commission staff (hereafter jointly referred to as “staff”) have reviewed the Calico Solar Project (formerly the Stirling Energy Systems Solar One Project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA and NEPA, staff concludes that the Calico Solar Project would not under CEQA cause a significant adverse direct or indirect impact or contribute to a cumulative socioeconomic impact on the area’s housing, schools, parks and recreation, police, emergency medical services, or hospitals, because the project’s construction and operation workforce currently resides in the regional or local labor market area. Staff also concludes that the project would not require the construction of new or altered public facilities.

The construction and operation of the proposed project would not result in any disproportionate socioeconomic impacts to low-income or minority populations. Gross public benefits from the project include capital costs, construction and operation payroll, and sales tax from construction and operation spending. No Conditions of Certification are proposed.

Please refer to the **LAND USE, RECREATION, AND WILDERNESS** section of this document for further analysis of recreation impacts.

C.10.2 INTRODUCTION

Staff’s socioeconomic impact analysis evaluates the project-induced changes on community services and/or infrastructure, and related community issues such as environmental justice. Staff discusses the estimated beneficial impacts of the construction and operation of the Calico Solar Project and other related economic impacts.

C.10.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of proposed project effects must comply with both California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements given the respective power plant licensing and land jurisdictions of the California Energy Commission and U.S. Bureau of Land Management (BLM). CEQA requires that the significance of individual effects be determined by the Lead Agency; however, the use of specific significance criteria is not required by NEPA.

Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws.

CEQA requires a list of criteria that are used to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (State CEQA Guidelines Section 15382).

In comparison, NEPA states that “‘Significantly’ as used in NEPA requires considerations of both context and intensity” (40 CFR 1508.27). Therefore, thresholds serve as a benchmark for determining if a project action would result in a significant adverse environmental impact when evaluated against the baseline. NEPA requires that an Environmental Impact Statement (EIS) is prepared when the proposed federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.”

The socioeconomic resource areas evaluated by staff are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Staff's assessment of impacts on population, housing, police protection, schools, emergency medical services, and parks and recreation are based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range for construction workers.

In addition, staff's evaluation of the proposed project's effects on socioeconomic resources includes an assessment of the context and intensity of the impacts, as defined in the NEPA implementing regulations 40 CFR Part 1508.27.

Effects of the proposed project on socioeconomic resources (and in compliance with both CEQA and NEPA) have been determined using the thresholds listed below.

According to Appendix G of the CEQA guidelines, a project may have a significant effect on population, housing, and public services if the project will:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere; or
- Adversely impact acceptable levels of service for fire and police protection, schools, parks and recreation, and other public facilities.

A socioeconomic analysis looks at beneficial impacts on local finances from property and sales taxes as well as potential adverse impacts on public services. To determine if a project would have any significant impacts, staff analyzes whether the current status of these community services and capacities can absorb the project-related impacts in each of these areas. A project's property taxes, sales tax, local school impact fees, or development fees can help local governments augment public services required to meet project needs. If the project's impacts could appreciably strain or degrade these services, staff considers this to be a significant adverse impact and would propose mitigation.

In this analysis, staff used fixed percentage criteria for evaluating demography for environmental justice. Impacts on housing, schools, medical services, law enforcement, parks and recreation, and cumulative impacts are based on professional judgments or input from local and state agencies. Substantial employment of people coming from

regions outside the study area has the potential to create significant adverse socioeconomic impacts. Significance criteria for subject areas such as utilities, fire protection, water use, and wastewater disposal are identified in the **SOIL AND WATER RESOURCES, RELIABILITY, WORKER SAFETY AND FIRE PROTECTION**, and **WASTE MANAGEMENT** sections of this staff assessment/draft environmental impact statement (SA/DEIS).

Laws, Ordinances, Regulations, and Standards

The following table contains all applicable socioeconomic laws, ordinances, regulations, and standards (LORS).

C.10.4 PROPOSED PROJECT

C.10.4.1 SETTING AND EXISTING CONDITIONS

The project would be located in an undeveloped area of San Bernardino County, north of Interstate 40, approximately 37 miles east of Barstow. The 850 MW project site is currently vacant and located within the Mojave Desert.

The 850 MW project would require approximately 8,230 acres of land to be authorized under a Right of Way (ROW) permit from the Bureau of Land Management (BLM). There would be approximately 2,246 acres of private land within the project boundary (3-5, Calico, AFC). The project site is approximately 17 miles east of Newberry Springs, and 57 miles northeast of Victorville, all of which are located in San Bernardino County. The project site is approximately 115 miles east of Los Angeles, which is located in Los Angeles County.

**Socioeconomics Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
Federal	
Emergency Economic Stabilization Act of 2008 (P.L. 110-343) Business Solar Investment Tax Credit (IR Code)	Extends the 30% investment tax credit (ITC) for solar energy property for eight years through December 31, 2016. The bill allows the ITC to be used to offset both regular and alternative minimum tax (AMT) and waives the public utility exception of current law (i.e., permits utilities to directly invest in solar facilities and claim the ITC). The five-year accelerated depreciation allowance for solar property is permanent and unaffected by passage of the eight-year extension of the solar ITC.
State	
California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.
California Revenue and Taxation Code Section 70-74.7	Property taxes are not assessed on solar facilities. Assembly Bill 1451 extended the current property tax exclusion for new construction of solar energy systems to January 1, 2017.

The applicant expects construction of the Calico Solar Project would take place in two phases and employ an average of 400 workers a month for the approximately four-year construction period. Phase I of the proposed project will consist of up to 20,000 Sun Catchers configured in 333 (1.5 MW) solar groups of 60 SunCatchers per group that will have a net nominal generating capacity of 500 MW. Phase II would expand the proposed project to 34,000 SunCatchers configured in 567 (1.5 MW) solar groups with a total net generating capacity of 850 MW. Monthly construction employment would peak at a maximum of 700 workers in the seventh month, with all other months below 700 workers. Construction for the proposed project would be for a 41-month period (5.10-16, Calico, AFC). At operation, the proposed project would employ approximately 180 full time workers, with maintenance activities occurring 7 days a week, 24 hours a day (5.10-26, Calico, AFC).

In 2008, the population of Barstow/Victorville was 23,952 and 107,408 respectively. San Bernardino County had a total population of 1,710,139 in 2000 and 2,055,766 in 2008 (5.10-3, Calico, AFC).

The unemployment rate for San Bernardino County and the incorporated communities in the vicinity of the proposed project in September 2008 ranged from 8.5% in San Bernardino County and 13% in Adelanto. The State of California unemployment rate was 7.5% in September 2008 (5.10-9, Calico, AFC).

ENVIRONMENTAL JUSTICE/DEMOGRAPHIC SCREENING

Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the US Environmental Protection Agency (EPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

Civil Rights Act of 1964, Public Law 88-352, 78 Stat.241 (Codified as amended in scattered sections of 42 U.S.C.) Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national programs in all programs or activities receiving federal financial assistance.

California law defines environmental justice as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Government Code Section 65040.12 and Public Resources Code Section 72000).

All Departments, Boards, Commissions, Conservancies and Special Programs of the Resources Agency must consider environmental justice in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require environmental justice consideration may include:

- Adopting regulations;
- Enforcing environmental laws or regulations;
- Making discretionary decisions of taking actions that affect the environment;
- Providing funding for activities affecting the environment; and
- Interacting with the public on environmental issues.

In considering environmental justice in energy siting cases, staff uses a demographic screening analysis to determine whether a low-income and/or minority population exists within the potentially affected area of the proposed site. The potentially affected area consists of a 6-mile radius of the site and is consistent with air quality modeling of the range of a project's air quality impacts. The demographic screening is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, December, 1997) and *Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (U.S. Environmental Protection Agency, April, 1998). The screening process relies on Year 2000 U.S. Census data to determine the presence of minority and below-poverty-level populations.

In addition to the demographic screening analysis, staff follows the steps recommended by the U.S. EPA's guidance documents which are outreach and involvement, and if warranted, a detailed examination of the distribution of impacts on segments of the population.

When **Socioeconomics Figure 1** shows a minority population present within the 6-mile radius, staff follows each of the above steps for the following 11 sections in the SA/DEIS: Air Quality, Hazardous Materials, Land Use, Noise, Public Health, Socioeconomics, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management. When a minority population is present, over the course of the analysis for each of the 11 areas, staff considered potential impacts and mitigation measures, significance, and whether there would be a significant impact on an environmental justice population.

Minority Populations

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

A minority population, for the purposes of environmental justice, is identified when the minority population of the potentially affected area is greater than 50% or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis.

The total population within the 6-mile radius of the proposed site is 1043 persons and the total minority population is 20 persons, or about 25% of the total population (see **Socioeconomics Figure 1**).

Below-Poverty-Level Populations

Staff also identified the below-poverty-level population based on Year 2000 U.S. Census block group data within a 6-mile radius of the project site. The below-poverty-level population within a 6-mile radius of the Calico Solar Project consists of 191 people or about 18.31% of the total population in that area. Staff expects to have Census 2010 data by early 2011.

C.10.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The socioeconomic resource areas evaluated by staff are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines and shown in **Socioeconomics Table 2**. Staff's assessment of impacts on population, housing, emergency medical services, police protection, schools, emergency medical services, and parks and recreation, are based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range for construction workers. Criteria for subject areas such as utilities, fire protection, water supply, and wastewater disposal are analyzed in the **RELIABILITY, WORKER SAFETY AND FIRE PROTECTION**, and **WATER RESOURCES** sections of this document.

DIRECT/INDIRECT/INDUCED IMPACTS

Induce Substantial Population Growth

For the purpose of this analysis, staff defines "induce substantial population growth" as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. To determine whether the project would induce population growth, staff analyzes the availability of the local workforce and the population within the region. Staff defines "local workforce" as the Riverside–San Bernardino–Ontario and the Los Angeles Metropolitan Statistical Areas MSA.

Staff used the San Bernardino and Riverside County labor market area (and two-hour commute of project site) for its evaluation of construction worker availability. Project construction would take place in two phases and employ an average of 700 workers a month for approximately four-year construction period. Month construction employment would peak at a maximum of 400 workers in month seven of the proposed schedule, with a total of 41 construction months (5.10-16, Calico, AFC). After construction, the project would employ approximately 180 employees.

Socioeconomics Table 2 shows that the total labor by skill in the Riverside–San Bernardino–Ontario and Los Angeles County MSAs is more than adequate to provide construction labor for the Calico Solar Project.

Socioeconomics Table 2
Total Labor by Skill in San Bernardino and Los Angeles Counties
Annual Average for 2016

Trade	San Bernardino County MSA	Los Angeles County MSA	Peak Number of Workers for Project Construction by Craft
Carpenters	32,390	30,050	40
Concrete Crews	4,690	4,530	42
Electricians	7,600	13,700	106
Ironworkers	1,090	770	38
Laborers	32,080	34,810	136
Miscellaneous Crews ¹	4,960	8,610	10
Operators	5,460	4,780	104
Plumbers	5,330	12,900	26
SES Technicians	N/A	N/A	32
SunCatcher Assemblers	990 ¹	1,350 ^{1,3}	64
SunCatcher Electricians	7,600 ³	13,700 ³	16 ³
SunCatcher Ironworkers	1,090 ³	770 ³	32 ³
SunCatcher Laborers	32,080 ³	34,810 ³	16 ³
SunCatcher Material Handlers	990 ^{1,3}	1,350 ^{1,3}	16 ³
SunCatcher Operators	5,460 ³	4,780 ³	8 ³
SunCatcher Teamsters	N/A	N/A	12 ³
SunCatcher Technicians	1,150 ³	5,130 ³	32 ³
Teamsters	N/A	N/A	58 ³
Technicians ²	1,150	5,130	6 ³

Notes:

1 - Other Construction and Related Workers

2 - Electrical and Electronic Engineering Technicians

3 - The applicant has indicated that local resources, hires and contractors would be used to the best extent practical. However, some positions would potentially need to be more specialized that may come from internal staff or outside the area.

Source: EDD Labor Market Information; Occupational Employment Projections 2006-2016., Calico Solar AFC, 5.10-17, Table 5.10-10

Because the majority of the construction workforce currently resides within San Bernardino and Riverside Counties, construction, and operation of the project would have little impact with respect to inducing substantial population growth. For operations, the

workforce is modest (180 workers) and most would reside within one hour commute of the proposed project site (5.10-26, Calico, AFC). Staff concludes that inducement of substantial population growth either directly or indirectly by the Calico Solar Project, under CEQA would not be significant or adverse.

Housing Supply

There are approximately 1,000 housing units available in the Barstow (2008) vicinity including single-family homes apartments and mobile homes available for rent. Additionally, there are approximately 1,050 housing units available for rent in Victorville (2008).

There are 49 motels with a total of approximately 4,000 rooms located in Barstow. A total of 321 hotels and approximately 21,500 hotel rooms were identified within a two-hour drive of the project site (Table 5.10-4, Calico, AFC). Based on the average annual motel and hotel occupancy rate in San Bernardino and Riverside Counties in 2008, on average, approximately 500 unoccupied motel and hotel rooms are available for rent in Barstow, with an additional 400 unoccupied motel and hotel rooms available elsewhere with a one hour drive of the site (primarily Victorville) (5.10-23, Calico, AFC).

Because of the large labor force within commuting distance of the project, staff expects the majority of construction and operations workers would commute to the project daily from their existing residences, and those that might in-migrate with their families could settle in the Barstow area with no expected adverse impacts on the local infrastructure or community services. The project would have 180 full-time employees; the majority of whom are expected to already reside in the area; the applicant expects 20 operational jobs recruited from outside the immediate project area.

The project would be located primarily on BLM-administered land in a relatively remote and largely uninhabited area and construction and operation of the project is not expected to adversely impact existing housing supply.

Displace Existing Housing and Substantial Numbers of People

The approximately 8,230-acre proposed site is located in an undeveloped area of San Bernardino County. The project site would be located approximately 37 miles east of Barstow, California and north of Interstate 40 (I-40). The proposed project is located primarily on Bureau of Land Management (BLM). The area is open, undeveloped land within the Mojave Desert (5.9-1, Calico, AFC).

The lands located within the project boundary are designated multi-use class M (moderate) by the BLM, and are zoned Resource Conservation by San Bernardino County. The Resource Conservation covers all the county lands within one mile of the proposed project. Land uses immediately adjacent to the proposed project site include transportation use, open space, and resource conservation. Newberry Springs, located 17 miles from the project site consists of single-family homes, mobile homes, recreational vehicle parts and commercial lots. One rural residence is located approximately 2 miles east and southwest (5.9-3, Calico, AFC).

Because of the large labor force within commuting distance of the project, staff expects the majority of construction workers would commute to the project daily from their

existing residences. No new housing construction would be required. The project would have 180 new full-time employees; the applicant expects all 180 employees would be hired within commuting distance of the project. Given the labor forces in San Bernardino County and surrounding counties within commuting distance of the project, staff does not expect employees would be relocated to the immediate project area.

Housing in San Bernardino County was at an 11.6% (2008) vacancy rate. The geographic area of Adelanto, Apple Valley, Barstow, Hesperia and Victorville was at 15.1%, 8.4%, 17.1%, 6.5%, and 7.7%, respectively (Table 5.10-3, Calico, AFC). Operation of the Calico Solar Project would require 180 new employees. The applicant estimates that operation of the project would result in 20 workers permanently relocating to the project area. The potential increase of 20 workers would have negligible effects on existing housing. Staff concludes that the proposed project would not displace any people or necessitate construction of replacement housing elsewhere.

Result in Substantial Physical Impacts to Government Facilities

Emergency Medical Services

Emergency services would be coordinated with the nearby fire department of Newberry Springs, California, and a hospital in Barstow, California. The San Bernardino County Fire Department indicated in the AFC, (5.10-31) that additional resources may be required to enable the Fire Department to provide adequate fire protection and emergency response services during construction and operation of the project. The applicant states in the AFC (5.10-36) they would work with the local fire protection and emergency response service providers to address the need for additional resources during the construction and operation phases of the project.

The city of Barstow and the county of San Bernardino, Hazardous Materials Units would respond to any hazardous material calls from the project site as part of the county-wide San Bernardino County Intra-agency Hazardous Materials Response Team. The Hazardous Materials team consists of approximately 150 members and is a Level A, which is capable of handling chemical, biological, radiological and nuclear responses. Response times from the City of Barstow Hazardous Materials unit would be approximately 35 minutes. The closest County Hazardous Materials unit is located at Station 322 in Adelanto, and the response time to the project site would be approximately 90 minutes (5.10-14, Calico, AFC).

An off-site medical clinic would be contracted to set up nonemergency physician referrals. First aid kits and fire extinguishers would be provided around the site and in offices, and would be regularly inspected and maintained by qualified personnel. Safety personnel trained in first aid would be part of the construction staff. An Emergency Medical Technician or other highly trained medical professional would be assigned to the site to provide advanced injury care. In addition, all foremen and supervisors would be given first aid training (5.17-14, Calico, AFC).

The Barstow Community Hospital is the closest hospital to the project site. The hospital has an emergency room onsite; however, does not have a trauma level emergency room. An ambulance would take approximately 20 to 30 minutes from project site to the Barstow Community Hospital. Loma Linda University Medical Center would treat all

major life threatening injuries. A helicopter flight from the project site to Loma Linda University Medical Center would take approximately 20 to 30 minutes. The medical center is a full service hospital with a level 1 trauma center and is capable of treating almost any injury (5.10-14, Calico, AFC).

The applicant states in the **WORKER SAFETY AND FIRE PROTECTION** section of the SA/DEIS that several programs would be required for construction and operation workers and would address health and safety, injury and illness prevention, personal protection equipment, fire protection and prevention, and hazardous materials handling and storage. As stated in the **WORKER SAFETY AND FIRE PROTECTION** section of this document, the applicant (or construction contractor) would ensure compliance with the all federal, state, and local health standards that pertain to worker health and safety and first-aid trained safety personnel would comprise part of the construction staff.

As previously discussed above, the applicant states in the AFC that the San Bernardino Fire Department may need additional resources to provide adequate fire protection and emergency response services during construction and operation of the project. However, the applicant's proposed safety procedures and employee training would minimize potential unsafe work conditions and the need for outside emergency medical response. Staff concludes that the emergency medical services provided by the local fire department and hospitals, in addition with the trained medical professional's located onsite, would be adequate during construction and operation of the proposed 850 MW project.

Law Enforcement

As stated in the AFC and verified by staff (<http://www.sbcounty.gov/sheriff>), the project falls under the jurisdiction of the San Bernardino County Sheriff's Department. The closest sheriff's office is located in Barstow. The office employs approximately 60 individuals; 35 deputies, two detectives, one "active detective" (detective in training), five sergeants, one school resource officer, a lieutenant, a captain and administrative staff. Response time to the project site would take approximately 20 minutes (5.10-13, Calico, AFC). The applicant states in the AFC (5.10-31), that San Bernardino County Sheriff's Department resources would not likely be impacted by operation of the project. In addition, the applicant states the department is well staffed and local/regional facilities are capable of handling any injuries that might occur at the project site.

The California Highway Patrol (CHP) (<http://www.chp.ca.gov>) is the primary law enforcement agency for state highways and roads. Services include law enforcement, traffic control, accident investigation and the management of hazardous material spill incidents. The nearest CHP office is located approximately 37 miles from the project site in Barstow, California.

The applicant states in the **PROJECT DESCRIPTION AND LOCATION** section of the AFC that onsite security measures would be installed as part of the project. Controlled access gates would be maintained at the entrances to the site. The Hector Road access would also serve as the main entry and exit gate during project operations. Twenty-four-hour site security monitoring would be provided in the control room via closed-circuit television and intercom system.

Perimeter security fencing and access gates would be provided for the project site, including fencing and gates around the main buildings, the electrical substation, and the construction laydown areas. Security monitoring cameras and active detection systems would be provided for project buildings, support areas, and the entire site perimeter. Regular site security vehicular patrols would be conducted to provide additional site security. Site access would be provided to off-site emergency response teams that respond in the event of an “after-hours emergency.” Entry into the project site by fire department or emergency units would be handled on a manual override basis by 24-hour security officers stationed at both entrances (3-24, Calico, AFC).

Unlike residential or commercial developments, power plants do not attract large numbers of people and thus require little in the way of law enforcement. Because of this factor and the proposed onsite security measures, staff concludes that the existing law enforcement resources would be adequate to provide services to the Calico Solar Project during construction and operation.

Education

There are two school districts located within the vicinity of the project site; Barstow Unified School District and the Silver Valley Unified School District. The project site is located within the Silver Valley Unified School District boundary. Silver Valley District serves the smaller communities located east of Barstow, including Yermo and Newberry Springs. The closest school to the project site is Newberry Springs Elementary, approximately 14 miles west of the project site. The closest high school is located in Yermo, approximately 33 miles west of the project site. Staff has provided information for the Barstow Unified School District in the event that construction workers or operations employees and their families who may choose to relocate to the vicinity would likely reside in the Barstow area.

The Barstow Unified School District has 13 schools; 9 elementary schools, one junior high school, one high school, one continuation school and one community day school. Student enrollment in the Barstow Unified School District has declined with approximately 5% fewer students enrolled in the 2007/08 school year (5.10-12, Calico, AFC) than two years before. Barstow Unified would be able to accommodate up to approximately 150 new students without requiring additional resources (5.10-12, Calico, AFC).

The Silver Valley Unified School District has 8 schools; 4 elementary schools, one middle school, one high school, one alternative school, and a continuation school. Enrollment has increased in recent years with approximately 2% more students enrolled in the 2007/08 school year (5.10-12, Calico, AFC). The Silver Valley Unified School District is not currently at capacity and could accommodate approximately 300 new students without additional resources (5.10-12, Calico, AFC).

During construction, staff expects the labor force would commute daily from the region and that the enrollment in local school districts would not increase. The applicant estimates that operation of the project would result in 20 workers of 180 required for project operation would permanently relocating to the project area from outside of the project area. The potential increase of 20 workers would have negligible effects to schools from the construction of the project. . However, in the unlikely scenario in which all 180 operation workers are newly relocated to the Silver Valley Unified School

District, an average family size of 3.15 persons per household (San Bernardino County) would result in the addition of about 207 school children to the schools in the district. Barstow and Silver Valley School Districts could accommodate approximately 150 new students and 300 new students, respectively. Potential new students would not impact existing school resources and the project would not require the construction of new or physically altered school facilities. Staff concludes that construction and operation of the proposed project would not cause a significant adverse impact on school facilities.

Like all school districts in the state, the Silver Valley Unified School District is entitled to collect school impact fees for new construction within their district under the California Education Code Section 17620. These fees are based on the project's square feet of habitable space. Because the main services complex of the Calico Solar Project (considered "habitable space") would be constructed entirely on BLM land, no private land would be affected and therefore, the provisions of Education Code Section 17620 would not apply to this project.

In addition, the Silver Valley Unified School District indicated that the proposed project would be exempt from the school impact fees because it would be developed on federal lands. (5.10-13, Calico Solar, AFC).

Increase the Use of Existing Recreation Facilities

The San Bernardino County Regional Parks (<http://www.sbcounty.gov/parks>) maintains a variety of regional parks, outdoor recreation and special activities. The regional parks amenities include picnicking, fishing, hiking, horseback riding, bird watching, overnight camping, horseshoes, swimming, water skiing, passive recreation and a ghost town.

Given the large labor force in the San Bernardino and Riverside Counties residing within two hours commuting time of the project, staff does not expect employees to relocate to the immediate project area. Staff concludes that there are a number and variety of parks within the regional project area and does not expect the construction or operation workforce to have a significant adverse impact on parks or necessitate construction of new parks in the area.

C.10.4.3 CEQA LEVEL OF SIGNIFICANCE

As discussed in the subject headings above, under CEQA, project-related socioeconomic impacts would be less than significant for population, employment, housing, schools, parks and recreation, emergency medical services, and law enforcement.

C.10.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage alternative would essentially be a 275 MW solar facility located within the central portion of the proposed 850 MW project. This alternative's boundaries and the revised locations of the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 1**.

Setting and Existing Conditions

The setting for the Reduced Acreage Alternative would eliminate approximately 67% of the proposed 850 MW project area. Potential impacts related to socioeconomic

resources would be reduced. The Reduced Acreage Alternative would transmit the power generated without requiring an upgrade to 65 miles of the existing 200 kV SCE Pisgah-Lugo transmission line. The Reduced Acreage Alternative would affect 33% of the land of the proposed 850 MW project.

Assessment of Impacts and Discussion of Mitigation

The alternative would eliminate approximately 67% of the proposed project area, would not require an upgraded transmission line, and would consist of less SunCatchers. The Reduced Acreage Alternative would require less construction with the above mentioned infrastructure and operation of the solar facility. The alternative would create a smaller fiscal impact than the proposed project, with less need of housing, school, parks and recreation, law enforcement and emergency medical services. The alternative would have a smaller impact than the proposed project on substantial population growth, impact housing supply, displace existing housing or substantial numbers of people or result in substantial physical impacts to government facilities. In addition, the alternative would have a smaller impact than the proposed project with smaller project cost, payroll, and local construction materials/supplies.

CEQA Level of Significance

Similar to the proposed project, the Reduced Acreage Alternative would not a cause adverse significant impact from construction or operation. The benefits of the project to the local economy would be reduced because of the smaller acreage which would cause less construction time, and less socioeconomic resources. Similar to the proposed 850 MW project, the Reduced Acreage Alternative would not require Socioeconomic conditions of certification.

C.10.6 AVOIDANCE OF DONATED AND ACQUIRED LANDS ALTERNATIVE

The Avoidance of Donated and Acquired Lands Alternative would be an approximately 720 MW solar facility located within the boundaries of the proposed 850 MW project. This alternative, the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 2**.

Setting and Existing Conditions

The setting of the Avoidance of Donated and Acquired Lands Alternative would eliminate about 15% of the 850 MW project area. The alternative would contain approximately 28,800 SunCatchers with a net generating capacity of approximately 720 MW occupying approximately 7,050 acres of land, and would affect 85% of the land of the proposed 850 MW project. The proposed project would avoid approximately 1,200 acres of donated and acquired lands.

Assessment of Impacts and Discussion of Mitigation

The Avoidance of Donated and Acquired Lands Alternative would affect 85% of the 850 MW project area. Although 15% would be not be used, this alternative would require the upgraded transmission line. The Avoidance of Donated and Acquired Lands Alternative would have fewer SunCatchers that the proposed 850 MW project, less land acreage

used, and LWCF lands would not be used. Less construction and operation would need to occur, which would require less housing, school, parks and recreation, law enforcement and medical services. Reduced construction would result in smaller fiscal effects from construction and operation sales tax. Total project costs, payroll costs, and local construction materials/supplies would have a smaller non-fiscal effect. The Avoidance of Donated and Acquired Lands Alternative would not impact socioeconomic resources.

CEQA Level of Significance

Similar to the proposed project, the Avoidance of Donated and Acquired Lands Alternative would not cause an adverse significant impact from construction or operation. The benefits of the project to the local economy would be reduced because of the smaller acreage, the construction and operation staff would be decreased, and there would be less impacts to socioeconomic resources. Similar to the proposed project, the Avoidance of Donated and Acquired Lands Alternative would not require Socioeconomic Conditions of Certification.

C.10.7 NO PROJECT / NO ACTION ALTERNATIVE

There are three No Project/No Action Alternatives evaluated in this section, as follows:

NO PROJECT/NO ACTION ALTERNATIVE #1:

No Action on the Calico Solar Project application and on CDCA land use plan amendment

Under this alternative, the proposed the Calico Solar Project would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no impacts related to socioeconomic or environmental justice would occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

NO PROJECT/NO ACTION ALTERNATIVE #2:

No Action on the Calico Solar Project and amend the CDCA land use plan to make the area available for future solar development

Under this alternative, the proposed the Calico Solar Project would not be approved by the CEC and BLM and BLM would amend the CDCA Land Use Plan of 1980, as

amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with a different solar technology. As a result, construction and operation of the solar technology would likely result in impacts to socioeconomics or environmental justice. Different solar technologies require varying numbers of personnel for construction and operation; however, all solar technologies in this area would require such personnel. As such, this No Project/No Action Alternative could result impacts to socioeconomics or environmental justice similar to under the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE #3:

No Action on the Calico Solar Project application and amend the CDCA land use plan to make the area unavailable for future solar development

Under this alternative, the proposed the Calico Solar Project would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended. There would be no socioeconomic or environmental justice impacts.

C.10.8 PROJECT-RELATED FUTURE ACTIONS – SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section examines the potential impacts of future transmission line construction, line removal, substation expansion, and other upgrades that may be required by Southern California Edison Company (SCE) as a result of the Calico Solar Project. The SCE upgrades are a reasonably foreseeable event if the Calico Solar Project is approved and constructed as proposed.

The SCE project will be fully evaluated in a future EIR/EIS prepared by the BLM and the California Public Utilities Commission. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information. The purpose of this analysis is to inform the Energy Commission and BLM, interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the Calico Solar Project.

The project components and construction activities associated with these future actions are described in detail in Section B.3 of this Staff Assessment/EIS. This analysis examines the construction and operational impacts of two upgrade scenarios:

- The **275 MW Early Interconnection Option** would include upgrades to the existing SCE system that would result in 275 MW of additional latent system capacity. Under the 275 MW Early Interconnection option, Pisgah Substation would be expanded adjacent to the existing substation, one to two new 220 kV structures would be constructed to support the gen-tie from the Calico Solar Project into Pisgah Substation, and new telecommunication facilities would be installed within existing SCE ROWs.

- The **850 MW Full Build-Out Option** would include replacement of a 67-mile 220 kV SCE transmission line with a new 500 kV line, expansion of the Pisgah Substation at a new location and other telecommunication upgrades to allow for additional transmission system capacity to support the operation of the full Calico Solar Project.

Environmental Setting

The environmental setting incorporates both the 275 MW Early Interconnection and the 850 MW Full Build-Out options. The setting for the 275 MW Early Interconnection upgrades at the Pisgah Substation and along the telecomm corridors is included within the larger setting for the project area under the 850 MW Full Build-Out option, which also includes the Lugo-Pisgah transmission corridor.

The potential social and economic impacts associated with the SCE upgrades include effects to population, housing, public services (fire protection, emergency medical response services, law enforcement, and schools), utilities, and government tax revenue, as well as economic benefits that would arise from the project's investment and payroll. The potential affected area would be San Bernardino County, specifically the northeast portion of the county near the Cities of Barstow and Hesperia.

This preliminary analysis of socioeconomic effects for the SCE Lugo-Pisgah No. 2 line uses baseline socioeconomic data compiled for the Calico Solar AFC. Both projects have the same affected area (San Bernardino County) for socioeconomic impacts and would be constructed on similar schedules. Therefore the population, housing, employment, income, and fiscal revenue data used in the Calico Solar Project AFC would be relevant to this analysis with the addition of the southwestern parts of the transmission line, near Lugo Substation, particularly for the City of Hesperia. The forecasted growth rate for the affected area is approximately 40,000 people per year. There are estimated to be about 5,000 housing units and more than 3,400 hotel rooms or other temporary housing available in the surrounding communities (36, Calico, Appendix EE Section 2.11.2.1).

Environmental Impacts

Because few, if any, workers are expected to relocate to the area, no new housing would be needed for the project, no housing would be displaced, and no new competition for existing housing would likely occur. Construction employees would likely already live within commuting distance to the project area in San Bernardino County. Should construction or operation workers choose to relocate to the Cities of Barstow, Riverside, San Bernardino, or Ontario, there is sufficient housing in these areas to not adversely affect the housing market. Temporary accommodations may also be needed during construction, but with numerous hotels and motels in the area, impacts are expected to be less than significant, and mitigation measures are not required.

The addition of project-related children to schools that are at or over capacity may increase costs in terms of supplies, equipment, and/or teachers but the impact would be minimal. Even so, this worst-case scenario is unlikely to occur since any non-local construction workers would not likely relocate family members for the relatively short duration of construction and very few if any new permanent employees would be hired by SCE for operation of the project.

Likewise impacts to law enforcement and public utilities would be minimal. Water and wastewater discharge is discussed in the **Soil and Water Resources** section of this Staff Assessment/EIS and solid waste removal is discussed in the **Waste Management** section of this Staff Assessment/EIS. Because of staff's socioeconomic analysis of the proposed project, and the on-site security and safety procedures for construction and operation as described in the **Worker Safety and Fire Protection** section of this SA/EIS, staff concludes that the emergency medical services resources would be adequate to meet the needs of the proposed upgrades project during construction and operation.

The construction or operation workforces are not expected to have a significant adverse impact on parks and recreation because of the number and variety of parks within the regional project area. In addition, construction workers are unlikely to bring their families to a work site, and therefore, impact existing park services would be less than significant.

Environmental Justice. EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. Guidelines provided by the Council on Environmental Quality (CEQ) (1997) and USEPA (1998) indicate that a minority community may be defined as one where the minority population comprises more than 50% of the total population or comprises a meaningfully greater share than the share in the general population. In 2006, the percentage of San Bernardino County's population reporting non-White race was about 20%, about the same as the state of California. The percentage of San Bernardino County's population reporting Hispanic or Latino ethnicity was 46% compared to about 36% for the state in 2006. In 2007, approximately 11.8% of San Bernardino County's population was living below poverty level compared to 12.4% statewide (37, Calico, Appendix EE Section 2.11.2.1). Therefore, staff concludes that the SCE proposed upgrades would not disproportionately or adversely impact minority or low income populations in the affected area.

Mitigation

Compliance with LORS discussed in the **Soil and Water Resources, Worker Safety and Fire Protection, Waste Management, and Reliability** sections of this Staff Assessment/EIS would ensure that impacts from SCE upgrades would be less than significant. No additional mitigation is recommended.

C.10.9 CUMULATIVE IMPACTS AND MITIGATION

A project may result in significant adverse cumulative impacts when its effects are cumulatively considerable; that is, when the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects [*Public Resources Code* Section 21083; *California Code of Regulations*, Title 14, Sections 15064(h); 15065 (c); 15130; and 15355]. Mitigation requires taking feasible measures to avoid or substantially reduce the impacts.

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally. An increased demand for labor could result in an influx of non-local workers and their dependents, resulting in a strain on housing, schools, parks and recreation, law enforcement, and medical services.

As shown in **Socioeconomics Table 3**, the total construction labor force by MSA for the region is more than sufficient to accommodate the labor needs for construction of power generation facilities and other large industrial projects. Because of the robust local and regional construction labor force, staff does not expect an influx of non-local workers and their dependents to the project area. Staff does not expect any significant and adverse impacts on housing, schools, parks and recreation, law enforcement, and emergency medical services. Staff does not expect construction or operation of the Calico Solar Project to contribute to any significant adverse cumulative socioeconomic impacts.

Socioeconomics Table 3
Occupational Employment Projections by MSA

Construction and Extraction Occupations for Selected MSAs	Average Annual Employment 2006	Average Annual Employment 2016
San Bernardino County MSA	137,160	155,250
Los Angeles County MSA	174,940	187,580
Orange County MSA	110,580	121,460
TOTALS	422,680	464,290

Source: EDD 2009 Projections of Employment by Industry and Occupation

C.10.10 NOTEWORTHY PUBLIC BENEFITS

Noteworthy public benefits include the direct, indirect, and induced impacts of a proposed power plant. For example, the dollars spent on or resulting from the construction and operation of the Calico Solar Project would have a ripple effect on the local economy. This ripple effect is measured by an input-output economic model. The model relies on a series of multipliers to provide estimates of the number of times each dollar of input or direct spending cycles through the economy in terms of indirect and induced output, or additional spending, personal income, and employment. The typical input-output model used by economists and the one used for this analysis by the applicant is the IMPLAN model. IMPLAN multipliers indicate the ratio of direct impacts to indirect and induced impacts. Staff reviewed the results of the IMPLAN model and found them to be reasonable considering data provided by the applicant as well as data obtained by staff from governmental agencies, trade associations, and public interest research groups. The proposed project site would be owned and operated by Stirling Energy Systems and would employ workers and purchase supplies and services for the life of the project. Employees would use salaries and wages to purchase goods and services from other businesses. Those businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local and regional economy. This effect of indirect (jobs, sales, and income generated) and induced (employees'

spending for local goods and services) spending continues with subsequent rounds of additional spending, which is gradually diminished through savings, taxes, and expenditures made outside the area.

For purposes of this analysis, direct impacts were said to exist if the project resulted in permanent jobs and wages; indirect impacts, if jobs, wages, and sales resulted from project construction; induced impacts, from the spending of wages and salaries on food, housing, and other consumer goods, which in turn creates jobs. Indirect and induced economic impacts from construction would take place over a four-year period (41 months).

All indirect and induced operation impacts would result from annual operations and maintenance expenditures. All construction and operation impacts would take place within San Bernardino County. The economic benefits of the proposed project, as required by the Energy Commission regulations and resulting from the IMPLAN model are shown below in **Socioeconomics Table 4**.

Socioeconomics Table 4
Calico Solar Economic Benefits (2008 dollars)

Fiscal Benefits	
Estimated annual property taxes	\$220,000 (on property components)
State and local sales taxes: Construction	\$700,000
State and local sales taxes: Operation	\$650,000
School Impact Fee	N/A
Non-Fiscal Benefits	
Total capital costs	\$1 billion
Construction payroll	\$159 million
Annual Operations and Maintenance	
Construction materials and supplies	\$9.1 million
Operations and maintenance supplies	\$8.4 million
Direct, Indirect, and Induced Benefits	
<i>Estimated Direct</i>	
Construction	393 jobs
Operation	180 full-time positions
<i>Estimated Indirect</i>	
Construction Jobs	99
Construction Income	\$10.3 million
Operation Jobs	N/A
Operation Income	\$2.2 million
<i>Estimated Induced</i>	
Construction Jobs	145
Construction Income	\$10.8 million
Operation Jobs	N/A
Operation Income	\$2.6 million

Source: Calico Solar AFC.

C.10.11 COMPLIANCE WITH LORS

Staff has considered the Federal and State laws, ordinances, regulations and standards as identified in **Socioeconomics Figure 1** and has found no potential significant adverse impacts regarding the Emergency Economic Stabilization Act of 2008, California Education Code 17620, California Government Code Section 65996-65997 and the California Revenue and Taxation Code Section 70-74.7.

Staff concludes that construction and operation of the Calico Solar Project would be in compliance with all applicable LORS regarding long-term and short-term project impacts in the area of **Socioeconomics and Environmental Justice**.

C.10.12 FACILITY CLOSURE AND DECOMMISSIONING

According to Section 3.12 of the applicant's project description, the solar generating facility is expected to have a lifespan of 40 years. At any point during this time, temporary or permanent closure of the solar facility could occur. Temporary closure would be a result of necessary maintenance, hazardous weather conditions, or damage due to a natural disaster. Permanent closure would be a result of damage that is beyond repair, adverse economic conditions, or other significant reasons.

Both temporary and permanent closures would require the applicant to submit to the Energy Commission a contingency plan or a decommissioning plan. A decommissioning plan would be implemented to ensure compliance with applicable socioeconomic LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

Upon closure of the facility or decommissioning, it is likely that the applicant would be required to restore lands affected by the project to their pre-project state. Given the fact that the proposed project site is located on undeveloped land with current evidence of high levels of disturbance (due to OHV use), staff anticipates that project decommissioning would have impacts similar in nature to proposed project construction activities. Therefore, given the temporary nature of decommissioning activities and the eventual return of the lands to their current state, staff concludes the effects of decommissioning on socioeconomic resources would not be adverse.

C.10.13 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

The proposed project does not require any socioeconomic conditions of certification or mitigation measures.

C.10.14 CONCLUSIONS

Staff concludes that construction, operation, and demolition of the proposed Calico Solar Project would not cause, under CEQA, a significant direct, indirect, or cumulative adverse socioeconomic impact on the study area's housing, schools, parks and recreation, law

enforcement, and emergency medical services. Socioeconomic impacts of the Calico Solar Project would not combine with impacts of any past, present, or reasonably foreseeable local projects to result in cumulatively considerable local impacts. Hence, there are no socioeconomic environmental justice issues related to this project. The Calico Solar Project, as proposed, is consistent with applicable Socioeconomic LORS.

Estimated gross public benefits from the Calico Solar Project include increases in sales, employment, and income in San Bernardino County and the surrounding region during construction and operation. There would be an estimated average of 180 direct project-related construction jobs for the 41 months of construction. The Calico Solar Project would have an estimated total capital cost of \$1 billion and a construction payroll of \$159 million annually. Total sales and use taxes during construction are estimated to be approximately \$700,000; during operation the local sales tax is estimated to be \$650,000 annually. An estimated \$9.1 million would be spent locally for materials and equipment during construction, and an additional \$8.4 million would be spent annually for the project's local operation and maintenance budget.

C.10.15 REFERENCES

California Department of Education, Data and Statistics, Student Demographics, School Year: 2006-07. <http://www.cde.ca.gov/ds/>

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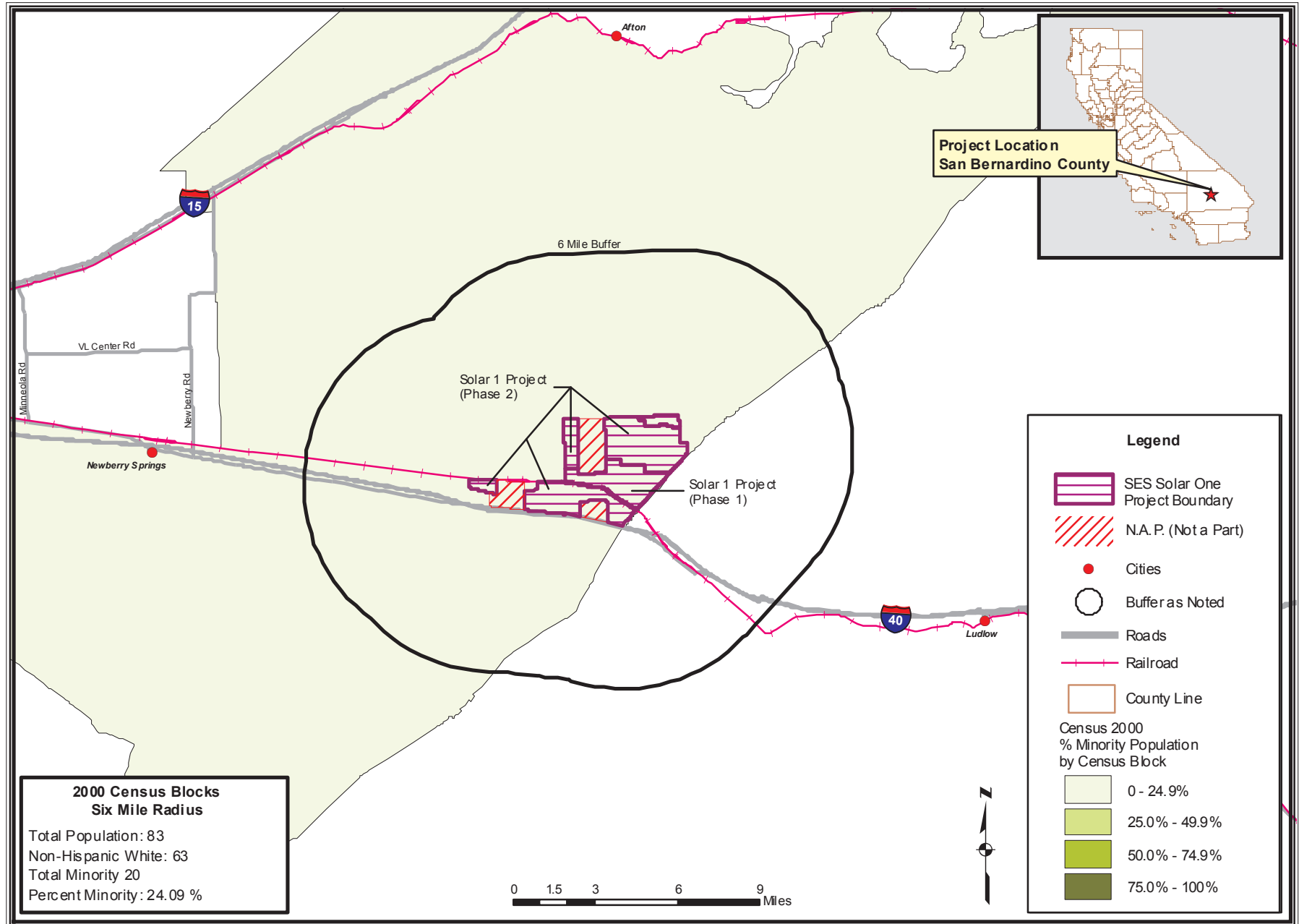
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SOCIOECONOMICS - FIGURE 1

Calico Solar Project - Census 2000 Minority Population by Census Block - Six Mile Buffer



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: ESRI and Tele Atlas Data California Energy Commission Statewide Power Plant Maps 2009 and URS - Census 2000 PL 94-171 Data

C.11 – TRAFFIC AND TRANSPORTATION

Testimony of Marie McLean

C.11.1 SUMMARY OF CONCLUSIONS

As currently proposed, the Calico Solar Project (formerly the Stirling Energy Systems Solar One Project) has the potential to impact Burlington Northern Santa Fe (BNSF) and AMTRAK train operations because of the proximity of SunCatcher mirrors to the BNSF tracks traversing the project site. In addition, the mirrors have the potential to impact motorists on I-40 and Route 66. Staff is currently investigating appropriate mitigation.

However, in all other areas, with implementation of recommended conditions of certification, the Calico Solar Project would be consistent with applicable federal, state, and local laws, ordinances, regulations, and standards. As a result, in those areas the project would not have a significant adverse impact under the California Environmental Quality Act (CEQA) on the local and regional roadway network.

With implementation of recommended conditions of certifications, local roadway and highway demand resulting from daily movement of workers would not increase beyond significance thresholds established by San Bernardino County and the state of California.

Currently, open Bureau of Land Management (BLM) routes transverse the project area. Those routes would be closed if any of the action alternatives or California Desert Conservation Area (CDCA) Plan amendments are approved.

C.11.2 INTRODUCTION

In the Traffic and Transportation analysis, staff focuses on:

1. Whether construction and operation of the Calico Solar Project would result in traffic and transportation impacts under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) and
2. If the project would be in compliance with applicable laws, ordinances, regulations, and standards (LORS).

In its analysis, staff identifies potential impacts related to the construction and operation of the Calico Solar Project on the surrounding transportation systems and roadways and, when applicable, proposes mitigation measures.

C.11.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Significance criteria are based on three items:

1. California Environmental Quality Act (CEQA) Guidelines
2. CEQA Environmental Checklist

3. Performance standards and thresholds established by interested agencies

A project may have a significant effect if it would:

1. Cause a substantial increase in traffic in relation to the existing traffic load or capacity of the street system.
2. Exceed an established level of service standard applicable for the designated roads or highways.
3. Alter existing patterns of circulation or the movement of people or goods or both.
4. Alter waterborne, rail, or air traffic.
5. Increase traffic hazards to motor vehicles, bicyclists, or pedestrians.
6. Result in inadequate emergency access or parking capacity or both.
7. Conflict with existing policies, plans, or programs.

Level of Service

When evaluating the project-related impacts on the local transportation system, staff bases its analysis on level of service (LOS) determinations. *Level of service* is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms *speed, travel time, and delay*.

The *Highway Capacity Manual 2000*, published by the Transportation Research Board, Committee on Highway Capacity and Quality of Service, includes six levels of service for roadways or intersections ranging from LOS A—the best operating conditions—to LOS F—the worst.

San Bernardino County and the State of California use the LOS criteria to assess the performance of its street and highway system and the capacity of roadway segments. The county's as well as the state's threshold standards policy requires that LOS C or better be maintained on roadway segments under their jurisdiction.

In addition, operations of intersections were evaluated using methodology contained in the *Highway Capacity Manual 2000*. This methodology is used to assess delays at an unsignalized intersection for movements operating under traffic control—a stop sign, for example. For an intersection at which the only stop-sign is placed at a side street, delay will be reported for movements controlled by the stop sign. The delay is then assigned a corresponding letter grade to represent the overall condition of the intersection or level of service. These grades range from LOS A, free-flow, to LOS F, poor progression.

The level-of-service standards for the Calico Solar Project as required by San Bernardino County and the State of California are as follows:

1. LOS C or better on roads and conventional highways located in San Bernardino County's Desert Region, the location of the Calico Solar Project.
2. LOS C or better on Interstate 40, the primary access road to the project site.

A significant impact would exist if the Calico Solar Project were to cause intersection operations to exceed the accepted LOS standards on a state, county, or federal roadway.

Laws, Ordinances, Regulations, and Standards

Staff uses LORS as significance criteria to determine if the proposed Calico Solar Project would have a significant adverse impact on the environment. The federal, state, and local regulations applicable to the proposed CSP are listed in **Traffic and Transportation Table 1**, which follows.

**Traffic And Transportation Table 1
Laws, Ordinances, Regulations, and Standards**

Applicable Law	Description
Federal	
<i>Code of Federal Regulations (CFR)</i> , Title 14, Aeronautics and Space; Part 77, Objects Affecting Navigable Airspace (14 CFR 77)	Includes standards for determining physical obstructions to navigable airspace; information about requirements for notices, hearings, and requirements for aeronautical studies to determine the effect of physical obstructions to the safe and efficient use of airspace.
<i>Code of Federal Regulations (CFR)</i> , Title 49, Subtitle B, Sections 171-177; Sections 350-399; Appendices A-G Other Regulations Relating to Transportation	Includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and as well as safety measures for motor carriers and motor vehicles operating on public highways.
State	
<i>California Vehicle Code (CVC)</i> , Division 2, Chapter 2.5, Div. 6; Chap. 7, Div. 13; Chap. 5, Div. 14.1; Chap. 1 and 2, Div. 14.8, Div. 15	Pertain to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and transporting hazardous materials.
California Streets and Highway Code, Section 117; Section 660-695; Section 700-711; Section 1450; 1460 et seq.; and 1480 et. Seq.	Pertain to regulating rights-of-way encroachments and granting permits for encroachment on state highways and freeways and on county roads.
California Health and Safety Code; Section 25160 et seq.	Pertain to operators of vehicles transporting hazardous materials
Local	
San Bernardino General Plan, Circulation and Infrastructure Element, Desert Region	Pertains to public policies and strategies for the transportation system in San Bernardino County, including those pertaining to transportation routes, terminals, and facilities; construction of extensions of existing streets; and levels of services (LOS).
San Bernardino Traffic Code, Section 52.0125	Pertains to requirements for oversize and overweight vehicles.

C.11.4 PROPOSED PROJECT

C.11.4.1 SETTING AND EXISTING CONDITIONS

The project site is located in San Bernardino County on approximately 8,230 acres of land owned by the United States government and managed by the US Department of Interior, Bureau of Land Management. Access to the site is off Hector Road, north of Interstate 40, 17 miles east of Newberry Springs and 115 miles east of Los Angeles in the Mojave Desert. The project consists of 29 contiguous parcels; and the Burlington Northern Santa Fe (BSNF) railroad bisects the site from west to east.

In the project area, I-40 is a primary east/west regional arterial beginning at the Interstate-15 interchange in the city of Barstow and heading east towards Arizona and eventually ending at the concurrence of U.S. Route 117 and North Carolina Highway 132 in Wilmington, North Carolina.

In the project area, I-40 is classified as a freeway with two lanes in each direction. Access to the site from I-40 is the Hector Road interchange. See **Traffic and Transportation Figure 1**, Local Transportation Network.

The proposed project would utilize SunCatchers— a 40-foot tall, 25-kilowatt-electrical (kWe) solar dish developed by Stirling Energy Systems. The SunCatcher system consists of a unique radial solar concentrator dish structure that supports an array of curved glass mirror facets.

Those mirrors are designed to automatically track the sun, collect and focus or concentrate its solar energy onto a patented power conversion unit (PCU). The PCU is coupled with and powered by a completely reengineered SES Stirling engine that generates power grid-quality electricity.

Originally, Stirling Energy Systems planned to construct its project in two phases: a 500-MW facility on 5,838 acres (Phase 1) and an additional 350 megawatt facility on the remaining 2,392 acres (Phase II). However, the applicant subsequently revised the project to align the output of Phase I with the capacity of the Southern California Edison (SCE) transmission system prior to the completion of a 500 kV upgrade to the Lugo-Pisgah Transmission line. Consequently, today Phase I would be limited to 275 MW, with the remaining 575 MW to be constructed as part of Phase II.

The project would consist of four laydown areas, two laydown areas for each phase of the project. The first phase would consist of a 26-acre laydown site located on the southeast corner of phase-one site. The second laydown area, which consists 14 acres, will be located next to the main services complex.

The second phase of construction would utilize a 26-acre laydown area located north of Interstate 40 (I-40). Other features and facilities associated with the proposed project—the majority of which are located on the proposed project site or construction laydown area)—include:

- Approximately 34,000 SunCatchers and associated equipment and infrastructure within a fenced boundary

- An onsite, 14.4-acre main services complex located in the north eastern portion of the Phase I section of the project site for administration and maintenance activities. The complex would include buildings, parking and access roads (SES 2008f page 3-62 and Figure 3-4)
- An onsite, 10-acre satellite services complex located in the eastern portion of the Phase II section of the project site for maintenance activities and SunCatcher mirror washing. The complex would include buildings, parking and access roads (SES 2008f page 3-62 and Figure 3-4)
- An onsite, 2.8-acre 850-MW Calico Solar Project substation located in the southern portion of the Phase I section of the site (SES 2008f page 3-62 and Figure 3-4)

To ensure adequate parking and staging areas for the project, staff recommends Condition of Certification **TRANS-1**.

Local Highways and Roads

The following roads are located in the vicinity of the project, Interstate 40, Route 66, and Hector Road. Information about each road follows. See **Traffic and Transportation Figure 2**.

Interstate 40 (I-40)

Interstate 40, an east-west interstate freeway, is located south of the Calico Solar Project site. I-40 begins at the Interstate-15 interchange in the city of Barstow, San Bernardino County, and heads east towards Arizona. Interstate 40 ends at the concurrence of U.S. Route 117 and North Carolina Highway 132 in Wilmington, North Carolina.

Interstate 40 is the major access road to and from the Calico Solar Project. A four-lane highway, two lanes in each direction, I-40 has 6 feet of shoulder on both sides and a wide center median. It is posted at 70 miles per hour (mph) in the vicinity of the site. The existing average daily traffic (ADT) near the vicinity of the Calico Solar Project site is 15,600 vehicles per day; 43% is truck traffic.

Temporary and permanent access to the project site will be through the Hector Road exit off I-40. The roadway segment north of the interchange is currently unpaved. The northbound and southbound approach at the double-track BNSF at-grade railroad crossing is newly improved with asphalt surface aprons.

Hector Road is currently gated and locked on both the northbound and southbound approaches. Access is controlled and determined by BNSF. See information about Hector Road in this section for additional information on access to the project site.

National Trails Highway (Route 66)

Route 66 is located south of the Calico Solar Project site and runs parallel to I-40. Route 66, a 2,448-mile roadway once known as the Main Street of America, runs west to east from Santa Monica, California, to Chicago, Illinois, wending its way through Arizona, New Mexico, Texas, Oklahoma, Kansas, and Missouri before ending in Chicago.

Hector Road

Hector Road, a local road running north-south, is the primary access to the Calico Solar Project site. It begins at Route 66 just south of the I-40 interchange and continues north to the project site. Hector Road ends just south of the BNSF railroad tracks and west of a gated crossing. The existing average daily traffic (ADT) on Hector Road near the vicinity of the project site is 31 vehicles per day.¹

Hector Road within the I-40 interchange is paved and controlled by Caltrans. Hector Road north of the Caltrans right-of-way extends for about 750 feet as a 24-foot paved roadway controlled by San Bernardino County. From the end of this San Bernardino County-controlled segment to the gated BNSF gated crossing, the road, controlled by BLM, extends for about 24 feet. This BLM-controlled road terminates at the BNSF right-of-way.

The Hector Road interchange will be used for both temporary and permanent access to the project site. Information about temporary and permanent access to the site follows.

Temporary Access Road

According to the applicant, temporary access for construction of the project will be provided from an existing road off Interstate 40 (I-40) and follow for approximately one mile the same alignment as the existing unimproved road leading from the Hector Road interchange to the existing gated railroad crossing. See **Traffic and Transportation Figure 1**.

The temporary road will be located along the north side of the BNSF right-of-way from the existing crossing and extend 1.75 miles east where it will be incorporated as part of the permanent road.

This temporary access road will be used by workers and visitors as well as for delivery of hazardous materials and other supplies. In addition, it will be used for access by fire trucks and ambulances. According to the applicant, this temporary access road will be used until October 2011, the date of expected completion of a bridge across the BNSF tracks.

According to the applicant, both the temporary and permanent access roads are to have two 12-foot travel lanes with 3-foot shoulders and exceed the minimum design requirements of the American Association of State Highway and Transportation Officials (AASHTO).

Staff is proposing Condition of Certification **TRANS-2** to ensure that the temporary access road conforms to the requirements of the California State Fire Marshall as contained in *California Code of Regulations*, Title 19, Section 3.05(a) and that the crossing meets all state and federal safety requirements, including required safety training and flagpersons necessary to control traffic.

¹ Staff notes interveners' comments concerning the gating of Hector Road, specifically that the gating prevents public and private property owners from accessing their property.

Permanent Access Road

The permanent access road roughly follows the layout of the temporary access road. However, while the temporary access road is designed so that those using the road must cross the BNSF tracks, the permanent access road will be designed so that those using the road will not cross the tracks but instead go over them on a bridge to be constructed as part of the permanent road. According to the applicant, the construction of the bridge will be completed by October 2011.

After crossing the bridge, the road would continue north for approximately one-fourth mile, then west for one and one-half miles to the Main Services Complex, where it would end. See **Traffic and Transportation Figure 1**.

This access road would be used by workers, suppliers, and emergency vehicles such as fire trucks and ambulances. Construction of this road requires the approval of the BNSF railroad and must meet all safety requirements for railroad crossings as required by the California Public Utilities Commission (PUC) and the Federal Railroad Administration (FRA).

Consequently, staff is recommending Condition of Certification **TRANS-3**, designed to ensure that prior to construction, the project owner concurrently:

1. Obtains written approval from BSNF to construct the proposed railroad crossing according to agreed-upon specifications and that after construction, the crossing meets with BNSF, PUC, and FRA approval
2. Coordinates with the Rail Crossings Engineering Section, California Public Utilities Commission, Los Angeles, as well as the Federal Railroad Administration to ensure that all state and federal requirements pertaining to railroad crossings will be met during and after construction.

Bureau of Land Management Routes

Several Bureau of Land Management (BLM) routes transverse the proposed project area.

Public Transportation

Public transportation consists of rail services, bicycle and pedestrian facilities, and airports. Information about those forms of public transportation follows.

Rail Service

The Burlington Northern Santa Fe Railway (BNSF) provides long-haul freight service throughout the United States over a 32,000-mile route. Near the project site, BNSF operates a double-track railroad line through the project site from east to west. See **Traffic and Transportation Figure 1** for the BNSF route intersecting the project site. AMTRAK's Southwest Chief route from Los Angeles to Chicago travels on the BNSF rail line through the middle of the project site, The Southwest Chief passenger train travels through the site only at night in both directions.

Staff has determined that the intersection of the BNSF rail line through the project site could pose a safety hazard for construction workers and others visiting or making deliveries to the construction site. State and federal regulations require that a flagperson be present at all times wherever workers, delivery persons, or visitors cross and unattended or open track. Consequently, staff has recommended Condition of Certification **TRANS-4** to require measures to be in place to help ensure the safety of workers and other visitors to the site. Those safety measures include coordination with BSNF concerning and AMTRAK, among other things.

Bicycle and Pedestrian Facilities

Neither bicycle nor pedestrian facilities are located in the project vicinity. Instead, bicycle and pedestrian circulation is limited to shoulders of rural highway and county roads and is not allowed on freeways such as I-40.

Airports

Three airport facilities are located in the general vicinity of the Calico Solar Project:

1. Barstow-Dagget Municipal Airport, located approximately 19 miles west of the project site
2. Twentynine Palms Airport, owned and operated by San Bernardino County, located approximately 32 miles southeast of the project site.
3. Bicycle Lake Army Airfield, a private-use facility, located approximately 34 miles northwest of the project site

Federal Aviation Administration (FAA) Regulation Part 77 contains specific requirements pertaining to objects affecting navigable airspace. However, that FAA regulation does not apply to the Calico Solar Project because the project is not located within 20,000 feet or less of a public use or military airport and will not contain an object 200 feet above ground level.

C.11.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The direct and indirect impacts of the proposed CSP on the transportation system are examined in this section. The assessment of transportation-related impacts is based on evaluations and technical analyses designed to compare the pre-CSP conditions to the post-CSP conditions, including the following:

1. Study intersection/road segment locations
2. Direct/indirect impacts and mitigation
3. Construction period impacts and mitigation
4. Operations impact and mitigation
5. Emergency services vehicle access
6. Water, rail, and air traffic
7. Impact of glare on motorists
8. Parking capacity

9. Transportation of hazardous materials
10. Laws, ordinances, regulations, and standards (LORS)
11. Conflict with policies, plans, or programs

Studied Intersection and Road Segment Locations

The following locations on the surrounding roadway network were reviewed:

1. Interstate 40, West of Hector Road
2. Interstate 40 West-Bound Ramp at Hector Road Intersection
3. Interstate 40, East of Hector Road
4. Interstate 40 East-Bound Ramp, at Hector Road Intersection
5. Hector Road, North of I-40, Westbound ramps, east of project site
6. Hector Road, South of I-40 10, Eastbound ramps, Mesa Drive
7. National Trails Highway, West of Hector Road
8. National Trails Highway, East of Hector Road
9. Hector Road and National Trails Highway Intersection

Direct/Indirect Impacts and Mitigation

Determinations of the direct and indirect impacts of the CSP are based on the relevant laws, ordinances, regulations, and standards (LORS) pertaining to this project. See the LORS section of this document. To address direct and indirect impacts and mitigation, two project scenarios have been evaluated:

1. Construction phase and mitigation
2. Operations phase and mitigation

Most traffic would occur during the construction phases. Consequently, the construction impacts have been examined in detail and mitigation proposed when necessary. That examination follows. The analysis of the operations phase follows the analysis of the construction phases. Mitigation has been proposed, when necessary.

Construction Period Impacts and Mitigation

Potential traffic impacts associated with the construction of CSP were evaluated for both construction workforce traffic and construction truck traffic.

Construction Workforce

Construction of the CSP would be completed over an approximately 48-month period beginning in 2010 and ending in 2014. The construction work force will peak during month 16 at approximately 731 workers per day in month seven (2011) and average approximately 400 workers over the course of construction.

Construction of the transmission line is expected to require a limited crew with fewer than 25 workers during peak periods. However, the transmission line construction schedule will not coincide with the peak of plant site construction employment.

During the 4-year construction period, the project is expected to employ an average of 400 workers per month. However, during the peak construction month, 731 workers will be on-site daily. To evaluate the worst-case scenario, the traffic analysis assumed no workers would carpool and all workers would arrive during the morning peak period (7 AM to 9 AM) and depart during the evening peak period (4 PM to 6 PM).

Peak Construction for Workers

During peak construction, the daily round trips for workers would total 1,462 trips, 731 inbound in morning and 731 outbound in evening.

Parking for workers will be provided in the 14-acre construction laydown area adjacent to 14.4-acre main services complex as well as the 26-acre laydown and staging areas on the south and east entrances to the site. In addition, employees may be moved to and from the site from surrounding areas and/or the laydown parking areas, in shuttles or other mass conveyance vehicles or both.

Consequently, staff has proposed Condition of Certification **TRANS-5**, preparation of a traffic control plan to ensure, among other things, adequate off-site parking for construction workers as well as elimination of congestion on I-40 at the temporary interchange at Hector Road off I-40.

The construction workforce, to be drawn from the surrounding local and regional area, including San Bernardino County and Riverside County, is expected to commute to the site. Approximately 20% of the workers are expected to travel east on I-40; approximately 80%, west on I-40.

The following roads and intersections will be used to travel to and from the project site. **See Traffic and Transportation Figure 1.**

1. Interstate 40, West of Hector Road
2. Interstate 40, East of Hector Road
3. Hector Road, North of I-40
4. Hector Road, South of I-40
5. National Trails Highway (Route 66), West of Hector Road
6. National Trails Highway (Route 66), East of Hector Road

The temporary intersection at Hector Road off I-40, which will be controlled by a stop sign, has the potential to result in congestion on I-40 as workers travel to and from the construction site. Consequently, staff has recommended Condition of Certification **TRANS-5**. With implementation of this condition, all roads and intersections during peak-hour construction are projected to operate at least LOS C or better during peak-hour construction. For example:

- Before project construction levels of service (LOS) for Interstate 40 east and west, Hector Road, and National Trails Highway operates at acceptable levels of service ranging from LOS B for I-40 and LOS A for Hector Road and National Trails Highway.
- During project construction peak hours the levels of service for roads and the intersection of I-40 via Hector Road will operate at LOS C or better with implementation of Condition of Certification **TRANS-5**. With implementation of Condition of Certification **TRANS-5**, during construction, Hector Road is projected to operate at the acceptable level of LOS B or C.
- All intersections used by construction traffic operate at LOS A before construction begins.
- During construction at peak hours, all intersections are projects to operate at acceptable levels of at least LOS C, including Hector Road, North of I-40 with implementation of Condition of Certification **TRANS-5**.

See **Traffic and Transportation Table 1**, 2011 Peak Hour Roadway Traffic Volumes, Design Capacities, and Levels of Service Without Project; **Traffic, and Transportation Table 2**, 2011 Peak Roadway Traffic Volumes With Project; **Traffic and Transportation Table 3**, 2011 Peak Hour Intersection Volumes With Project; and **Traffic and Transportation Table 4**, 2011 Peak Hour Intersection Volumes Without Project, which follow.

These tables reflect the levels of service as reported by the applicant. However, during peak traffic times staff (1) considered that the intersection used by workers to get to the project site was signed; and (2) assumed the worst possible conditions—that no workers would carpool and all workers would arrive during the morning peak period (7 AM to 9 AM) and depart during the evening peak period (4 PM to 6 PM).

Consequently, the number of workers driving to the site through that signed intersection could significantly impact traffic on I-40 at during morning arrival and evening departure times. Consequently, staff imposed Condition of Certification **TRANS-5**, to ensure that levels of service remained at least a LOS C.

Traffic and Transportation Table 1
2011 Peak Hour Roadway Traffic Volumes
Design Capacities, and Levels of Service Without Project

2011 Existing Conditions without Calico			Morning Peak Hour		Evening Peak Hour	
Roadway Segment	Traffic Volumes	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
I-40 – West of Hector Road	15,660 ¹	B ⁴	8.8	A	8.8	A
I-40 – East of Hector Road	16,850 ¹	B ⁴	8.8	A	8.8	A
Hector Road – North of I-40	10/10 ²	A/A ⁵	---	---	8.5	---
Hector Road – South of I-40	10/15 ⁵	A/A ⁵	---		---	---
National Trails Highway – West of Hector Road	10/10 ²	A/A ⁵	8.5	A	8.5	A
National Trails Highway – East of Hector Road	10/15 ²	A/A ⁵	8.5	A	8.5	A
BLM Access Road – North of I-40	N/A	N/A	---	---	---	---

Notes and Sources: 2007 Traffic Volumes (Caltrans, 2008a); ²AM/PM Volumes (Higher Volumes between Northbound and Southbound Direction), Source: National Data Services, 2008a; 2007 Truck Volumes (Caltrans, 2008b); 4 ADT LOS; 5 Peak Hour LOS; 6 Peak Hour LOS is based on Table 5.11-3, San Bernardino CMP, 2003 Update. Information not listed was not available; ADT = Average Daily Traffic; LOS = Level of Service. Source: URS Corporation.

Traffic and Transportation Table 2
2011 Peak Hour Roadway Traffic Volumes
Design Capacities, and Levels of Service With Project

2011 Existing Conditions with Calico			Morning Peak Hour		Evening Peak Hour	
Roadway Segment	Traffic Volumes	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
I-40 – West of Hector Road	17,000 ¹	B ⁴	15.5	C	13.1	B
I-40 – East of Hector Road	17,250 ¹	B ⁴	16.5	C	11.0	B
Hector Road – North of I-40	705/775 ²	B/C ⁵	---	---	---	---
Hector Road – South of I-40	10/15 ²	A/A ⁵	---	---	---	---
National Trails Highway – West of Hector Road	10/10 ²	A/A ⁵	8.5	A	8.5	A
National Trails Highway – East of Hector Road	10/15 ²	A/A ⁵	8.5	A	8.5	A
BLM Access Road – North of I-40	81/12 ²	A/A ⁵	---	---	---	---

Notes and Sources: 2007 Traffic Volumes (Caltrans, 2008a); ²AM/PM Volumes (Higher Volumes between Northbound and Southbound Direction), Source: National Data Services, 2008a; 2007 Truck Volumes (Caltrans, 2008b); 4 ADT LOS; 5 Peak Hour LOS; 6 Peak Hour LOS is based on Table 5.11-3, San Bernardino CMP, 2003 Update. Information not listed was not available; ADT = Average Daily Traffic; LOS = Level of Service. Source: URS Corporation 2008.

**Traffic and Transportation Table 3
2011 Peak Hour Intersection
Levels of Service Without Project**

Intersection	AM Average Delay (sec/veh)	LOS	PM Average Delay (sec/veh)	LOS
I-40 – Westbound Ramp/Hector Road	8.8	A	8.8	A
I-40 – Eastbound Ramp Hector Road	8.8	A	8.8	A
Hector Road/National Trails Highway	---	---	8.5	---

Source: URS Corporation.

**Traffic and Transportation Table 4
2011 Peak Hour Intersection
Levels of Service During Construction**

Intersection	AM Average Delay (sec/veh)	LOS	PM Average Delay (sec/veh)	LOS
I-40 – Westbound Ramp/Hector Road	15.5	C	13.1	B
I-40 – Eastbound Ramp Hector Road	16.5	C	11.0	B
Hector Road/National Trails Highway	8.5	A	8.5	A

Source: URS Corporation.

Construction Truck Deliveries

During construction the passenger car equivalent (PCE) of approximately 41 trucks are expected to arrive at and leave from the construction site each morning and evening, resulting in a total of 274 trips during the 48-month construction period. Most deliveries will occur between 7 AM and 5 PM on weekdays.

Because these trucks will use the temporary intersection off I-40 to Hector Road, which is controlled by a stop sign, staff is recommending for inclusion in Condition of Certification **TRANS-5** a requirement for ensuring that the arrival and departure time of these trucks does not occur in peak traffic periods, thereby contributing to a decrease in the LOS on I-40 to unacceptable levels.

To transport this equipment, the applicant must obtain special permits from Caltrans to move oversized or overweight materials. In addition, the applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary.

Consequently, staff is recommending Condition of Certification **TRANS-6** to ensure the project owner will comply with vehicle size and weight limitations imposed by Caltrans and other relevant jurisdictions; Condition of Certification **TRANS-7** to ensure the applicant complies with Caltrans' and other relevant jurisdictions' limitations on encroachments into public rights of way; and **TRANS-8** to ensure that the project owner will restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities. Repairs shall be of the kind to restore the roads, easements, and rights-of-way to their original or near-original condition.

Emergency Services Vehicle Access

The applicant is proposing to build a temporary access road to the project site. Staff has recommended Condition of Certification **TRANS-2** to require the applicant to conform to California State Fire Marshal requirements for adequate access for emergency vehicles.

With implementation of recommended Condition of Certification **TRANS-2**, staff's opinion is that the regional access to the site is adequate. Emergency vehicles, whether from local or surrounding cities, can access the site directly from I-40.

Transportation and Storage of Hazardous Materials

Approximately ten types of hazardous materials, including hydrogen gas, will be used at the site during construction. See **Hazardous Materials Handling** in this document. Those materials will be delivered to the site and disposed of by trucks via I-40 at regularly scheduled intervals. In addition, the CSP site would include chemical storage tanks.

To ensure that the transporting of hazardous materials will comply with all applicable federal and state regulations pertaining to the transportation of these materials, staff is recommending Condition of Certification **TRANS-9**. See **Traffic and Transportation Table 8** for information about these regulations.

Operation Impacts and Mitigation

Due to the nature and location of the CSP a relatively minor amount of traffic would be generated from the site during operations. Assuming the worst-case scenario, approximately 164 workers would drive alone and arrive at the site each day at 8-hour intervals. Assuming the worse-case scenario with truck traffic, an average of 12 round-trip truck trips daily would arrive throughout the day to the project site.

This increase in traffic, based on worst-case scenarios, would be minor and not contribute to increases in LOS on surrounding roads. Hence, no mitigation is required.

Operation of the CSP will result in a small amount of vehicular traffic. Operational workforce is estimated to be 164 workers. The arrival and departure time of those workers will be staggered in three 8-hour shifts to over operations on a 24-hour, 7-day-a-week basis. Consequently, peak weekday traffic will be less than 60 vehicles even if every employee were to commute in his or her own vehicle.

Consequently, the surrounding roadways and intersections are projected to operate well below LOS capacity when CSP is operational in 2016. Projections have taken into account continued local and regional growth.

Truck travel as well as other non-employee site visits will be very small and will typically occur during non-peak periods. Consequently, cumulative operational impacts will not be significant and not require mitigation.

Emergency Services Vehicle Access

Regional access to the site will be directly from I-40 via a permanent access road to be built by the applicant. Staff recommends Condition of Certification **TRANS-3** to ensure that the access road conforms with local, county, and State Fire Marshal codes, including those that pertain to requirements for emergency vehicle access such as fire trucks and ambulances. Implementation of Condition of Certification **TRANS-3** would ensure that access for emergency vehicles is adequate.

Parking

Parking for workers would be providing onsite on the grounds of a 10-acre satellite services complex located in the eastern portion of the Phase II section of the project site. When operational, the project would employ up to 164 workers, who would work in three 8-hour shifts. Consequently, parking for workers is adequate.

Water and Rail Obstructions

The proposed CSP is not located adjacent to a navigable body of water; therefore, the CSP is not expected to alter water-related transportation. However, BNSF operates a double-track railroad line through the project site. Staff is proposing Condition of Certification **TRANS-4** to address safety concerns associated with workers and other aspects of project construction.

Impact of Glare

The proposed Calico Solar Project would utilize SunCatchers— a 40-foot tall, 25-kilowatt-electrical (kWe) solar dish developed by Stirling Energy Systems. The SunCatcher system consists of a unique radial solar concentrator dish structure that supports an array of curved glass mirror facets. Those mirrors are designed to automatically track the sun and collect and focus or concentrate its solar energy onto a patented power conversion unit (PCU).

The SunCatcher mirrors have the potential to move off-axis during cloud cover, and staff is concerned that the energy of the reappearing sun redirected from the mirrors nearest the rail line may pose a visual hazard to motorists on I-40; construction and operational workers; visitors; and crews and passengers on trains traversing the project site on BNSF tracks

Consequently, staff has determined that the impacts of the SunCatchers may present a hazard to motorists; workers; visitors; and train crews and passengers and is in the process of obtaining additional information to determine the impact of the SunCatcher mirrors.

Transportation of Hazardous Materials

Approximately ten types of hazardous materials will be used at the site during operations. See **Hazardous Materials Handling** in this document. Those materials will be delivered to the site and disposed of by trucks via Interstate 40 at regularly scheduled intervals.

Consequently, staff is recommending Condition of Certification **TRANS-9** to ensure that the transporting of hazardous materials will comply with all applicable federal and state regulations pertaining to the transportation of these materials. See **Traffic and Transportation Table 3** for information about these regulations.

Cumulative Impacts

According to *California Environmental Quality Act (CEQA) Guidelines*, a project may result in significant adverse cumulative impacts when its effects are “cumulatively considerable.”

Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, or the effects of probable future projects (Title 14, California Code of Regulations, section 15130).

Cumulative traffic and transportation impacts could occur when more than one project has an overlapping construction schedule resulting in a demand on highways that, if met, would result in an unacceptable level of service (LOS). An unacceptable level of service would result in traffic delays, significantly reduced traffic flows, and backup of traffic at signed intersections.

Operational cumulative traffic and transportation impacts could occur when the operation of multiple projects significantly impacts the highways, resulting in unacceptable levels of service (LOS) on highways.

Cumulative impacts of the Calico Solar Project were analyzed in the context of other known projects in the area. The analysis was based on the construction schedule indicated in the Executive Summary of the *Application for Certification* prepared by the applicant and submitted to the California Energy Commission on December 2, 2008. In that Executive Summary the applicant indicated that construction would begin in Fall 2010; be completed in Fall 2012; and the plant would be in full-scale operation in Winter 2012. The year 2012 traffic estimate is based on a 2% per year general growth rate.

In the general vicinity of the Calico Solar Project, the following projects were proposed, approved, or already exist:

1. Abengoa Solar Project, 250 MW solar thermal, Proposed. Application for Certification being reviewed by California Energy Commission.
2. SES Solar Three, 914 MW solar thermal, Proposed.
3. SES Solar Six, 1,631 MW solar thermal, Proposed.
4. Southern California Edison Pisgah Substation Expansion and Pisgah-Lugo Upgrade, Proposed.

5. CACTUS, originally a solar plant, now converted into an observatory, Existing.
6. Two small mines within 14 miles of project, Existing.

Staff analyzed the traffic-related impacts of those existing or proposed projects when combined with the traffic-related activities of the Calico Solar Project.² See **Cumulative Impacts Figure 3**.

Except for the Abengoa Mojave Project, the existing or proposed projects although relatively close to the Calico Solar Project on I-40 will not significantly impact traffic due to number of workers; construction schedules, and existing capacity of I-40.

However, the Abengoa Mojave Project Application for Certification (AFC) is currently being reviewed by the California Energy Commission. This project has the potential to result in cumulative impacts on local highways. Abengoa Mojave's 24-month construction period—third third quarter 2010 to third quarter 2012—overlaps with the construction schedule of the Calico Solar Project. In fact, the Calico Solar Project has essentially the same construction schedule—late 2010 to late 2012.

However, impacts will be mitigated to less than significant through the following actions:

1. For the Abengoa Mojave project, staff assumed that workers would be traveling from the west. Total daily peak construction traffic, including workforce and busses, would be 2,092 vehicle trips, 52 bus trips, and 134 truck trips. To reduce traffic impacts staff recommended Condition of Certification **TRANS-1**, which required the applicant to provide a park-and-ride lot west of the site near SR-58. Consequently, traffic would likely travel on US Route 395 to SR 58 to get to the Park-and-Ride lot. See **Cumulative Impacts Figure 3**.

However, staff also assumed that some if not all workers would be staying in hotels and motels in the Barstow area. Consequently, staff will include this assumption in its final staff analysis. In addition, staff will recommend a condition of certification that would require workers to walk to central locations in Barstow to be picked up and transported to the project site, thereby eliminating the need for a park-and-ride location for those staying in motels and hotels.

2. For the Calico Solar Project, staff assumed that the workers would also be traveling from the west. During peak construction month, the applicant estimated 731 vehicles, one for each worker, traveling to and from the site and 41 truck deliveries. Those workers would likely travel to the site on I-15 to Barstow and then to I-40 to the project site. See **Cumulative Impacts Figure 3**. For those workers, staff is recommending Condition of Certification **TRANS-10** to require a park-and-ride lot in or near Barstow.
3. However, for the Calico Solar Project, staff assumes that most if not all workers will stay in Barstow and commute to the project site. To reduce traffic on I-40, staff is recommending Condition of Certification **TRANS-11**, requiring bus transportation from Barstow to the project site. That condition of certification would require that

²Other projects were proposed but not considered, including Broadwell BrightSource, three wind projects, and the Twentynine Palms Expansion because of existing concerns with the projects; location; or length of EIS review period ..

workers walk to central locations in Barstow to be picked up and transported to the project site, thereby eliminating the need for a park-and-ride location for those staying in hotels and motels.

In addition, during regular operations projects listed in this section generate a negligible amount of traffic. Consequently, the cumulative impacts of these projects are less than significant.

Conflict with Policies, Plans, or Programs

With implementation of recommended conditions of certification, the Calico Solar Project would not conflict with any formal policies, plans, or programs related to transportation aspects of the project.

C.11.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage alternative would essentially be a 275 MW solar facility located within the central portion of the proposed 850 MW project. It was developed because it could be constructed without the necessity of a new 500 kV transmission line, and would avoid several other environmental impacts. This alternative's boundaries and the revised locations of the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 1**.

C.11.5.1 SETTING AND EXISTING CONDITIONS

The general setting and existing conditions would remain as described in C.11.4.1 although the land requirements would be proportionately reduced to reflect the smaller project size. Locations of laydown areas may also vary.

C.11.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The implementation of this alternative would reduce the number of workers needed for the construction and operation of this project. However, that reduction would not have a significant impact for the following reasons: It does not change the project's setting and the change in the number of workers is not significant. That is, traffic would still need to be mitigated because of the intersection at which workers would need to exit to the project. That intersection is signed and without mitigation, LOS would decrease to unacceptable levels.

C.11.5.3 CEQA LEVEL OF SIGNIFICANCE

Similar to the proposed project, staff considers project compliance with LORS and staff's conditions of certification to be sufficient to ensure that no significant impacts would occur as a result of waste management associated with the Reduced Acreage Alternative.

The implementation of this alternative would not significantly affect the number of workers needed for the construction and operation of this project because it does not change the setting of the project or the necessity of the workers to travel on I-40. Workers required for this project is relatively small and even each worker traveling alone

in one vehicle would not exceed acceptable levels of service on I-40. However, staff has proposed mitigation to encourage car-pooling or other methods of reducing traffic impacts.

C.11.6 AVOIDANCE OF DONATED AND ACQUIRED LANDS ALTERNATIVE

The Avoidance of Donated and Acquired Lands Alternative would be an approximately 720 MW solar facility located within the boundaries of the proposed 850 MW project. This alternative, the transmission line, substation, laydown, and control facilities are shown in **Alternatives Figure 2**.

C.11.6.1 SETTING AND EXISTING CONDITIONS

The general setting and existing conditions would remain as described in C.15.4.1 although the land requirements would be proportionately reduced to reflect the smaller project size. Locations of laydown areas may also vary.

C.11.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

With suitable mitigation, the 720 MW solar facility located with the boundaries of the proposed 850 MW project would not significantly affect the level of service (LOS) on I-40. Based on the LOS for I-40 in the location of the Calico Solar Project, the additional number of vehicles could be absorbed and not cause a significant impact on the road. However, to get to the project site, workers have to travel through an intersection that is controlled by a stop sign.

Consequently, traffic could easily get backed up from both east and west directions and result in a decrease in a LOS to a significant level. However, suitable mitigation exists to ensure that the LOS is kept acceptable levels. That mitigation consists of park-and-ride locations and staggered work hours. However, because of the location of the Calico Solar Project; the expected direction of travel of workers—west; and the location of the project site from workers' homes, workers would likely stay in motels in the local area and be transported to the project site on buses provided by the applicant.

Consequently, the impact of workers on the local roadway would be insignificant.

Presently, open BLM routes that traverse the Avoidance of Donated and Acquired Lands Alternative area would be closed if the proposed project is approved, limiting transportation through the area. Fewer routes would be impacted, compared with the proposed action.

C.11.6.3 CEQA LEVEL OF SIGNIFICANCE

Similar to the proposed project, staff considers project compliance with LORS and staff's conditions of certification to be sufficient to ensure that no significant impacts would occur as a result of traffic and transportation associated with the 720 MW Alternative.

C.11.7 NO PROJECT/NO ACTION ALTERNATIVE

There are three No Project / No Action Alternatives evaluated as follows:

C.11.7.1 NO PROJECT / NO ACTION ALTERNATIVE #1

No Action on the Calico Solar Project application and on CDCA land use plan amendment

Under this alternative, the proposed Calico Solar Project would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

If the proposed project is not approved, renewable projects would likely be developed on other sites in San Bernardino County, the Mojave Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are dozens of other wind and solar projects that have applications pending with BLM in the California Desert District.

The impacts of traffic and transportation of developing renewable projects being developed on other sites in San Bernardino County, the Mojave Desert, or adjacent states would be not significant because of the various mitigation measures available for transporting workers to those sites. These mitigation measures include:

1. Busing workers to the sites from central locations
2. Staying in local hotels and motels near the site and being bused to the site
3. Staggering work hours over a 24-hour period
4. Providing park-and-ride locations

C.11.7.2 NO PROJECT / NO ACTION ALTERNATIVE #2

No Action on the Calico Solar Project and amend the CDCA land use plan to make the area available for future solar development

Under this alternative, the proposed Calico Solar Project would not be approved by the CEC and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with the same or a different solar technology. As a result, impacts on traffic and transportation would essentially be the same and the same mitigation would be proposed to ensure a significant impact on the roadways would not occur.

That mitigation would include park-and-ride locations; staying in motels and being bused to work; and staggering work hours.

C.11.7.3 NO PROJECT / NO ACTION ALTERNATIVE #3

No Action on the Calico Solar Project application and amend the CDCA land use plan to make the area unavailable for future solar development

Under this alternative, the proposed Calico Solar Project would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result the negative impacts on the local transportation system would be nonexistent due to the construction and operation of a solar project. Roads would continue to operate at a relatively high level of service.

C.11.8 PROJECT-RELATED FUTURE ACTIONS - TRANSPORTATION AND TRAFFIC

This section examines the potential impacts of future transmission line construction, line removal, substation expansion, and other upgrades that may be required by Southern California Edison Company (SCE) as a result of the Calico Solar Project. The SCE upgrades are a reasonably foreseeable event if the Calico Solar Project is approved and constructed as proposed.

The SCE project will be fully evaluated in a future EIR/EIS prepared by the BLM and the California Public Utilities Commission. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information. The purpose of this analysis is to inform the Energy Commission and BLM, interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the Calico Solar Project.

The project components and construction activities associated with these future actions are described in detail in Section B.3 of this Staff Assessment/EIS. This analysis examines the construction and operational impacts of two upgrade scenarios

- The 275 MW Early Interconnection Option would include upgrades to the existing SCE system that would result in 275 MW of additional latent system capacity. Under the 275 MW Early Interconnection option, Pisgah Substation would be expanded adjacent to the existing substation, one to two new 220 kV structures would be constructed to support the gen-tie from the Calico Solar Project into Pisgah Substation, and new telecommunication facilities would be installed within existing SCE ROWs.
- The 850 MW Full Build-Out Option would include replacement of a 67-mile 220 kV SCE transmission line with a new 500 kV line, expansion of the Pisgah Substation at

a new location and other telecommunication upgrades to allow for additional transmission system capacity to support the operation of the full Calico Solar Project.

C.11.8.1 ENVIRONMENTAL SETTING

The environmental setting described herein incorporates both the 275 MW Early Interconnection and the 850 MW Full Build-Out options. The setting for the 275 MW Early Interconnection upgrades at the Pisgah Substation and along the telecomm corridors is included within the larger setting for the project area under the 850 MW Full Build-Out option, which also includes the Lugo-Pisgah transmission corridor.

The proposed transmission line route would generally follow a southwest line from north of the Town of Newberry Springs, crossing I-40 east of Daggett, crossing State Highway 247 and terminating south of Hesperia at the SCE Lugo Substation. The major access routes for project workers would likely be I-40, I-15, and State Highway 247, as well as secondary routes such State Route 18 (SR 18).

The section of I-40 within the project area would be from Barstow southeast to Needles. This segment of I-40 is a fully improved freeway through Barstow at the junction with I-15. I-15 extends northeasterly from the Victorville area through Barstow and Las Vegas. It is fully improved to freeway status in the Victorville area with grade-separated interchanges at Bear Valley Road, Palmdale Road, Hook Boulevard, Mojave Drive, "D" Street, and Stockton Wells Road. State Highway 274 is classified as a minor arterial and is a two-lane highway connecting Barstow and Lucerne Valley near SR 18. SR 18 is a two-way, two-lane roadway.

The roadway operating characteristics for these routes have been defined in several recent transportation planning documents, including the Victor Valley Area Transportation Study (SANBAG 2008). LOS defines roadway operating conditions as follows:

- **LOS A:** Free flow, with no restrictions on maneuvering or operating speeds. Minimal or no delay.
- **LOS B:** Stable flow, with some restrictions on maneuvering or operating speeds. Nominal delays
- **LOS C:** Stable flow, with more restrictions on speed and maneuverability. Some delays.
- **LOS D:** Approaching unstable flow. Restricted speed and maneuverability. Delays encountered at intersections.
- **LOS E:** Unstable flow, with some stoppages. Constitutes maximum capacity by definition. Extensive delays at some locations.
- **LOS F:** Forced flow, with many stoppages. Low operating speeds, extensive queuing and very extensive delays.

The Victor Valley Area Transportation Study identifies current Level of Service (LOS) for I-15 as LOS C or better, and SR 18 in the Victor Valley Area as LOS D, E or F. Bear

Valley Road at the I-15 interchange (between Highway 395 and Cottonwood Road) is also operating at a LOS F (SANBAG 2008). The intersection of U.S. 395 and SR 18 in Victorville has been improved and is controlled with traffic signals. Widening SR 18 has been proposed as part of the High Desert Corridor project improving highway access between Victorville and Palmdale to the west. **TRAFFIC AND TRANSPORTATION Table 5** lists the 2008 traffic volumes on SR 18 between Highway 247 and Highway 395 in the Apple Valley, Victorville and Hesperia areas.

Traffic And Transportation Table 5
2008 Traffic Volumes on State Route 18 between Highway 247 and Highway 395

Postmile ¹	State Route 18 Description	Back Peak Hour	Back Peak Month	Back AADT ²	Ahead Peak Hour	Ahead Peak Month	Ahead AADT ²
73.783	Lucerne Valley, Jct. Rte. 247	520	5,600	5,400	920	10,000	9,600
84.325	Bear Valley Cutoff	910	11,000	10,400	470	5,700	5,400
88.871	Apple Valley, Yucca Loma-Navajo Road	1,100	13,500	12,800	1,750	21,800	20,700
90.936	Apple Valley Inn Road	2,250	27,000	26,500	2,850	34,500	33,500
94.390	Apple Valley Road	2,850	34,500	33,500	4,050	48,500	47,500
95.220	Victorville, Stoddard Wells Road	4,050	48,500	47,500	3,800	45,500	44,500
95.790	Victorville, Seventh Street	3,100	37,500	36,500	2,700	32,500	31,500
96.571	Victorville, North Jct Rte 15, Barstow Freeway Jct. Rte. 15	2,350	28,000	27,500	4,050	46,500	43,500
97.001	Victorville, Amargosa Road	4,050	46,500	43,500	2,950	33,500	31,500
100.956	Jct. Rte. 395	1,750	20,000	18,700	950	11,100	8,600

Source: Caltrans 2008.

¹ Postmile: Each profile breakpoint is identified by the milepost value corresponding to that point on the highway. The milepost values increase from the beginning of a route within a county to the next county line. The milepost values start over again at each county line. Milepost values usually increase from south to north or west to east depending upon the general direction the route follows within the state. The milepost at a given location will remain the same year after year.

² Annual Average Daily Traffic (AADT) is the total volume for the year divided by 365 days. Back AADT, Peak Month, and Peak Hour usually represents traffic South or West of the count location. Ahead AADT, Peak Month, and Peak Hour usually represent traffic North or East of the count location.

C.11.8.2 ENVIRONMENTAL IMPACTS

The construction activity requiring the largest workforce would likely be the installation of the conductors and optical ground wire (OPGW). In addition, at some stages of the project, especially during the full build-out construction, multiple locations would be under construction simultaneously.

Consequently, several independent construction teams may be working throughout the project area. As a result, the overall peak number of workers may be greater. The area's roadways would also be used for transportation of equipment and access to the

temporary staging areas and the transmission and telecommunication corridors. Finally, the movement of heavy machinery or the possible need to use rail lines, such as the BNSF railroad tracks that bisect the project area, to deliver equipment or materials to the project site could also affect the surrounding transportation system.

The proposed SCE upgrades are unlikely to adversely affect traffic circulation or parking conditions along any of the expected access routes. Both options would be required to comply with updated requirements in transportation plans for San Bernardino County and the cities of Victorville and Hesperia. All of the transportation plans for these communities are being changed and improvements implemented as part of the Southern California Association of Governments' Regional Transportation Improvement Plan and San Bernardino County's updated Regional Transportation Plan.

The upgrades associated with the 275 MW Early Interconnection option would occur primarily in rural areas with low traffic volumes; however, the 850 MW Full Build-Out option could affect the LOS for transportation facilities under the jurisdiction of Caltrans and the local communities. Based on this preliminary analysis of LOS of highway segments that would be likely to be used to access the project site by workers, the major potential impact is increased traffic on SR 18 east of U.S. 395 by workers accessing the Lugo Substation and the southwestern portion of the proposed transmission line route. This roadway segment is currently at an LOS D, E or F and is likely to drop below target operations levels in the next few years if roadway improvements are not implemented. It is assumed that some workers would carpool, and not all workers would be commuting from the project site on I-40, I-15, State Highway 247 and SR 18. Regardless, at the beginning and end of the work day, additional construction personnel would travel on SR 18 east of U.S. 395. Although the exact number of construction workers is unknown, construction of the 850 MW Full-Build Out option would temporarily exacerbate existing congestion on SR 18 east of U.S. 395 in Hesperia and may result in potentially significant temporary impacts to traffic flow.

In addition, large vehicles delivering materials and oversized vehicles used in the construction process may affect traffic flow on one or more of the roadways, resulting in a safety hazard. These potential impacts can be avoided through mitigation, which is discussed below. In addition, there is potential for unexpected damage to roads by vehicles and equipment (overhead line trucks, crew trucks, concrete trucks, etc.) that would be entering and leaving roads within the project area.

Helicopters may be used to support construction during stringing activities, in areas where access is limited (e.g., no suitable access road, limited pad area to facilitate onsite structure assembly area), where there are environmental constraints to accessing the project area with standard construction vehicles and equipment, and periodically for maintenance during operation.

Project activities potentially facilitated by helicopters may include delivery of construction laborers, equipment and materials to structure sites, structure placement, hardware installation, and wire stringing operations. The operations area of the helicopters would be limited to helicopter staging areas near construction locations that are considered safe for landing. Final siting of staging areas for the SCE project would be conducted

with the input of the helicopter contractor, affected private landowners and land management agencies.

Permits and Impact Fees. Some of the potential permits and impact fees that may be applicable to the project construction and transport of equipment or materials include:

- City of Victorville Oversize Load Permit
- Apply at least 2 working days prior to oversize load on city roadways Caltrans Oversize Load Permit
- Apply at least 7 working days prior to oversize load on state highways Lucerne Valley Local Area Transportation Facilities Impact Fee
- Assessed on commercial projects and truck trips on Lucerne Valley roadways

C.11.8.3 MITIGATION

Because SR 18 east of U.S. 395 in Hesperia is already highly congested, and project-related construction traffic would exacerbate congestion, project impacts on SR 18 east of U.S. 395 in Hesperia are considered potentially significant. To limit SCE's project's contribution to existing congestion on SR 18 east of U.S. 395 in Hesperia, implementation of mitigation similar to Conditions of Certification in this Staff Assessment/EIS, which would require development and approval of a traffic control plan, would be recommended. The traffic control plan should include methods to substantially reduce the project's impact on SR 18 traffic or interference with road widening construction, such as staggering the departure of construction workers from the project area and/or establishing a carpool/vanpool incentive program. With proper implementation of the traffic control plan, the project's direct impact during construction can be reduced to a less than significant level.

Temporary guard structures should be constructed across roads and other potentially inhabited areas to protect those areas in the unlikely event that a conductor breaks and the line falls to the ground. This safety precaution would reduce the potential for construction materials falling on any intersecting roadways during the tensioning/cable pulling process. The following possible locations would be where guard structures may be installed to facilitate construction crossings: existing distribution lines, dirt roads, and other roadway and rail crossings, such as the AT&SF Railroad. The types of guard structures that would be required for crossings and the number of crossings necessary should be field verified upon completion of final design. Installation of guard structures would also help to ensure that access for emergency service providers is maintained to the maximum extent feasible.

All access and spur road improvements and construction, whether on or off of the ROW, would comply with applicable permits and approvals, and SCE has preliminarily stated that any damage to existing roads as a result of construction would be repaired once construction is complete.

The use of helicopters for the erection of LSTs would be in accordance with SCE specifications and would be similar to methods detailed in IEEE 951-1966, Guide to the Assembly and Erection of Metal Transmission Structures, Section 9, Helicopter

Methods of Construction. The upgrades, including all helicopter construction activities, would also be required to comply with all appropriate regulations of the Federal Aviation Administration (FAA), such as restrictions on helicopter flights within 1,500 feet of residential dwellings. To offset potential impacts from helicopter use, helicopter use should be included in the Traffic Management Plan, which should be developed as part of the mitigation similar to Condition of Certifications in this Staff Assessment/EIS.

C.11.8.4 CONCLUSION

The intersection of a new access road with an existing public road would be constructed in accordance with the requirements of the agency having authority over the existing public road. Any activity that would need to occur outside of the existing transmission line ROW would require landowner notification and permission for access. Movement of heavy machinery on local roads would occur intermittently, but infrequently over the construction period. Since the majority of the upgrade activities for both options would take place in undeveloped areas on BLM land, impacts to traffic level of service for most roadways in the project vicinity would be less than significant. However, because SR 18 east of U.S. 395 in Hesperia is already highly congested and project-related construction traffic would exacerbate congestion, project impacts to traffic flow on SR 18 east of U.S. 395 in Hesperia are considered potentially significant.

To limit SCE's project's contribution to existing congestion on SR 18, implementation of mitigation similar to Conditions of Certification in this Staff Assessment/EIS is recommended. Based on the temporary nature of the construction activities and the minor staffing and equipment expected to be required compared to the traffic volumes on I-40, I-15, State Highway 247 and SR 18, coupled with implementation of mitigation measures similar to Conditions of Certification concerning peak hour traffic would likely ensure that any potential impacts of SCE's upgrades to traffic and transportation would be less than significant.

C.11.9 CUMULATIVE IMPACT ANALYSIS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7).

There is the potential for substantial future development in the San Bernardino Valley area and throughout the southern California desert region. Analysis of cumulative impacts is based on data provided in the following maps and tables (see **CUMULATIVE SCENARIO**):

- Cumulative Impacts Figure 1, Regional Renewable Applications;
- Cumulative Impacts Figure 2, Renewable Applications in the Barstow & Needles District Areas;

- Cumulative Impacts Figure 3, Newberry Springs/Ludow Area - Existing and Future/Foreseeable Projects;
- Cumulative Impacts Table 1, Renewable Energy Projects in the California Desert District
- Cumulative Impacts Table 2, Existing Projects in the Newberry Springs/Ludow Area; and
- Cumulative Impacts Table 3, Future Foreseeable Projects in the Newberry Springs/Ludlow Area.

The analysis in this section first defines the geographic area over which cumulative impacts related to traffic and transportation could occur. The cumulative impact analysis itself describes the potential for cumulative impacts to occur as a result of implementation of the Calico Solar Project along with the listed local and regional projects.

Geographic Extent

Cumulative impacts can occur within San Bernardino County if implementation of the Calico Solar Project could combine with those of other local or regional projects. Cumulative impacts could also occur as a result of development of some of the many proposed solar and wind development projects that have been or are expected to be under consideration by the BLM and the Energy Commission in the near future. Many of these projects are located within the California Desert Conservation Area, as well as on BLM land in Nevada and Arizona.

The geographic extent for the analysis of the cumulative impacts associated with the Calico Solar Project includes San Bernardino County. This geographic scope is appropriate because the roads to be most affected by the project are roads that are located in San Bernardino County, particularly I-40.

Potential Environmental Impacts

Local Impacts

Eleven projects either exist or are projected to be constructed during the same period as the Calico Solar Project. See Cumulative Impacts Figure 3 and the Cumulative Impacts section of this document.

These projects include the following:

1. Abengoa Solar Project, 250 MW solar thermal, Proposed. Application for Certification being reviewed by California Energy Commission.
2. SES Solar Three, 914 MW solar thermal, Proposed.
3. SES Solar Six, 1,631 MW solar thermal, Proposed.
4. Southern California Edison Pisgah Substation Expansion and Pisgah-Lugo Upgrade, Proposed.

5. CACTUS, originally a solar plant, now converted into an observatory, Existing.
6. Two small mines within 14 miles of project, Existing.

According to *California Environmental Quality Act (CEQA) Guidelines*, a project may result in significant adverse cumulative impacts when its effects are “cumulatively considerable.”

Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, or the effects of probable future projects (Title 14, California Code of Regulations, section 15130).

Cumulative traffic and transportation impacts could occur when more than one project has an overlapping construction schedule resulting in a demand on highways that, if met, would result in an unacceptable level of service (LOS). An unacceptable level of service would result in traffic delays, significantly reduced traffic flows, and backup of traffic at signed intersections.

Operational cumulative traffic and transportation impacts could occur when the operation of multiple projects significantly impacts the highways, resulting in unacceptable levels of service (LOS) on highways.

Cumulative impacts of the Calico Solar Project were analyzed in the context of other known projects in the area. The analysis was based on the construction schedule indicated in the Executive Summary of the *Application for Certification* prepared by the applicant and submitted to the California Energy Commission on December 2, 2008. In that Executive Summary the applicant indicated that construction would begin in Fall 2010; be completed in Fall 2012; and the plant would be in full-scale operation in Winter 2012. The year 2012 traffic estimate is based on a 2% per year general growth rate.

In the general vicinity of the Calico Solar Project, the following projects were proposed, approved, or already exist:

1. Abengoa Solar Project, 250 MW solar thermal, Proposed. Application for Certification being reviewed by California Energy Commission.
2. SES Solar Three, 914 MW solar thermal, Proposed.
3. SES Solar Six, 1,631 MW solar thermal, Proposed.
4. Southern California Edison Pisgah Substation Expansion and Pisgah-Lugo Upgrade, Proposed.
5. CACTUS, originally a solar plant, now converted into an observatory, Existing.
6. Two small mines within 14 miles of project, Existing.

Staff analyzed the traffic-related impacts of those existing or proposed projects when combined with the traffic-related activities of the Calico Solar Project.³ See **Cumulative Impacts Figure 3**.

Except for the Abengoa Mojave Project, the existing or proposed projects, although relatively close to the Calico Solar Project on I-40, will not significantly impact traffic due to number of workers; construction schedules, and existing capacity of I-40.

However, the Abengoa Mojave Project, whose Application for Certification (AFC) is currently being reviewed by the California Energy Commission, has the potential to result in cumulative impacts on local highways.

Abengoa Mojave's 24-month construction period—third third quarter 2010 to third quarter 2012—overlaps with the construction schedule of the Calico Solar Project. In fact, the Calico Solar Project has essentially the same construction schedule—late 2010 to late 2012.

However, impacts will be mitigated to less than significant through the following actions:

1. For the Abengoa Mojave project, staff assumed that workers would be traveling from the west. Total daily peak construction traffic, including workforce and busses, would be 2,092 vehicle trips, 52 bus trips, and 134 truck trips. To reduce traffic impacts staff recommended Condition of Certification **TRANS-1**, which required the applicant to provide a park-and-ride lot west of the site near SR-58. Consequently, traffic would likely travel on US Route 395 to SR 58 to get to the Park-and-Ride lot. See **Cumulative Impacts Figure 3**.

However, staff also assumed that some if not all workers would be staying in hotels and motels in the Barstow area. Consequently, staff will include this assumption in its final staff analysis. In addition, staff will recommend a condition of certification to require workers to walk to central locations in Barstow to be picked up and transported to the project site, thereby eliminating the need for a park-and-ride location for those staying in motels and hotels.

2. For Abengoa Solar workers traveling to the project site, staff assumed they would be driving north on US Route 395 to get to the project site because that route is closest to the park-and-ride lot proposed as Condition of Certification **TRANS-1** in the Abengoa Mojave preliminary staff assessment.

For the Calico Solar Project, staff assumed that the workers would also be traveling from the west and driving north on I-15 and then driving west on I-40 to the project site. During peak construction month, the applicant estimated 731 vehicles, one for each worker, traveling to and from the site and 41 truck deliveries. Those workers would likely travel to the site on I-15 to Barstow and then to I-40 to the project site. See **Cumulative Impacts Figure 3**. For those workers, staff is recommending Condition of Certification **TRANS-10** to require a park-and-ride lot in or near Barstow.

³Other projects were proposed but not considered, including Broadwell BrightSource, three wind projects, and the Twentynine Palms Expansion because of existing concerns with the projects; location; or length of EIS review period ..

3. However, for the Calico Solar Project, staff assumes that most if not all workers will stay in Barstow and commute to the project site. To reduce traffic on I-40, staff is recommending Condition of Certification **TRANS-11**, requiring bus transportation from Barstow to the project site. That condition of certification would require that workers walk to central locations in Barstow to be picked up and transported to the project site, thereby eliminating the need for a park-and-ride location for those staying in hotels and motels.

During regular operations facilities listed in this section generate a negligible amount of traffic. Consequently, the cumulative impacts of these projects are less than significant.

Regional Impacts

Projects located along I-40 and included in **Cumulative Impacts Figure 1, 2, and 3** and **Cumulative Tables 1B, 2, and 3**, may have the potential to result in increased congestion on that highway. These projects include solar and wind projects in the California Desert District and Renewable energy projects. Not all projects will be built. However, the construction of one of these projects, Abengoa, is in the process of being reviewed by the California Energy Commission. And if built as proposed, it has the potential to affect traffic on local roads and highways.

As indicated in the Local Impacts section, above, for both the Abengoa Mojave Project, staff has proposed Condition of certification **TRANS-1** in the Abengoa Mojave preliminary staff assessment and in the Calico Solar Project, Condition of Certification **TRANS-10** and Condition of Certification **TRANS-11** to mitigate any impacts.

In addition, staff:

1. Notes that with the proposed park-and-ride location nearer to the Abengoa Solar site, workers to the site will likely travel on US Route 395, thus not compounding any traffic volumes on I-15, the route likely to be used by workers to the Calico Solar Project site.
2. Assumes that most workers for both the Abengoa Mojave Project as well as the Calico Solar Project will reside in motels in Barstow and the surrounding area rather than drive an average of 100 miles each way to the project site every day. Staff will revise its final staff assessment of Abengoa Solar to include the assumption that most workers will reside in motels in Barstow or the local area, which will dramatically reduce traffic on both US Route 395 and I-15.

Cumulative Impacts Conclusion

In this analysis, staff considered the cumulative impacts of all future/foreseeable and existing projects as indicated in **Cumulative Impacts Figure 3** would not result in a significant cumulative impact for the following reasons:

1. The number of workers needed for existing projects is minimal.
2. The mitigation measures proposed for both Abengoa Mojave and the Calico Solar Project as well as the likelihood that most workers for both the Abengoa Mojave and the Calico Solar Project will stay in local motels during the weekend and be bused to

the worksites will result in acceptable levels of level of service (LOS) on roads and highways to be of acceptable levels.

3. Even all existing and proposed projects used the same roadways, which is not the case, the conditions of certification imposed on Abengoa Mojave and the Calico Solar Project, which include park-and-ride programs; use of different highways to get to and from the job site; as well as the likelihood that workers will reside in local hotels and motels during the construction period would help to ensure that affected roadways operated at acceptable LOS.

C.11.10 COMPLIANCE WITH LORS

The proposed Calico Solar Project is intending to comply with all federal, state, and local LORS. Development and operation of the Calico Solar Project, as planned, would not conflict with the LORS as described in this section. **Traffic and Transportation Table 6** summarizes the SES Solar Two's conformance with all applicable LORS.

Traffic and Transportation Table 6
Calico Solar Compliance with Adopted Traffic and Transportation LORS

Applicable Law	Description
Federal	
<i>Code of Federal Regulations</i> (CFR), Title 14, Aeronautics and Space; Part 77, Objects Affecting Navigable Airspace (14 CFR 77)	This regulation includes standards for determining physical obstructions to navigable airspace; information about requirements for notices, hearings, and requirements for aeronautical studies to determine the effect of physical obstructions to the safe and efficient use of airspace. <i>Not applicable.</i>
<i>Code of Federal Regulations</i> (CFR), Title 49, Subtitle B, Sections 171-177; Sections 350-399; Appendices A-G Other Regulations Relating to Transportation	49 CFR Subtitle B includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and as well as safety measures for motor carriers and motor vehicles operating on public highways. <i>Consistent:</i> Applicant has indicated its intention to adhere to all applicable regulations. This adherence is made part of the licensing process as a Condition of Certification; TRANS-5; TRANS-6; TRANS-7; TRANS-8; and TRANS-9.

Applicable Law	Description
State	
<i>California Vehicle Code</i> (CVC), Division 2, Chapter 2.5, Div. 6; Chap. 7, Div. 13; Chap. 5, Div. 14.1; Chap. 1 and 2, Div. 14.8, Div. 15	These code sections pertain to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and transporting hazardous materials. <i>Consistent:</i> Adhering to these regulations is made part of the licensing process as a Condition of Certification. See TRANS-6 and TRANS-9 .
California Streets and Highway Code, Section 117; Section 660-695; Section 700-711; Section 1450; 1460 et seq.; and 1480 et. Seq.	Pertain to regulating rights-of-way encroachments and granting permits for encroachment on state highways and freeways and on county roads. <i>Consistent:</i> Adhering to these regulations is made part of the licensing process as Condition of Certifications. See TRANS-7 .
California Health and Safety Code; Section 25160 et seq.	Pertain to operators of vehicles transporting hazardous materials. <i>Consistent:</i> Adhering to these regulations is made part of the licensing process as a Condition of Certification. See TRANS-9 .
California Public Resources Code, Section 21096	Requires lead agencies performing a CEQA analysis on a project situated within airport land use compatibility plan boundaries to use the Airport Land Use Planning Handbook (ALUPH) published by Caltrans Aeronautics as a technical resource to assist in the analysis. <i>Consistent:</i> Energy Commission staff adhered to this regulation when preparing this document.
Local	
San Bernardino General Plan, Circulation and Infrastructure Element, Desert Region	Pertains to public policies and strategies for the transportation system in San Bernardino County, including those pertaining to transportation routes, terminals, and facilities; construction of extensions of existing streets; and levels of services (LOS). <i>Consistent:</i> See TRANS-5 ; TRANS-6 ; TRANS-7 ; TRANS-8 and TRANS-9 .
San Bernardino Traffic Code, Section 52.0125	Pertains to requirements for oversize and overweight vehicles. <i>Consistent:</i> See Condition of Certification TRANS-6 .

C.11.11 NOTEWORTHY PUBLIC BENEFITS

The proposed project would result in traffic and transportation impacts related to project construction. These impacts are found to be cumulatively significant. Consequently, staff has recommended conditions of certification to reduce the impact to less than significant. BLM's evaluation for compliance with NEPA assumes that these Conditions of Certification are part of the proposed action.

While the development of the proposed project is intended to address the requirements of federal and state mandates to develop renewable energy, it would not yield any noteworthy public benefits related to traffic and transportation.

C.11.12 FACILITY CLOSURE

Staff has considered facility closure and decommissioning impacts to Traffic and Transportation under individual headings in Assessment of Impacts and Discussion of Mitigation above. Impacts would be mitigated by implementing the required conditions of certification.

C.11.13 PROPOSED CONDITIONS OF CERTIFICATION

TRANS-1– Parking and Staging. During construction of the Calico Solar Project and all related facilities, the project owner shall develop and implement a parking and staging plan for all phases of project construction. This parking and staging plan shall be designed to enforce a policy that all project-related parking occurs on-site or in designated off-site parking areas and that staging occurs on-site in a specifically-defined area.

Verification: At least 60 days prior to start of site mobilization, the project owner shall submit the plan to the County of San Bernardino and BLM Operations Manager for review and comment and to the CPM for review and approval.

TRANS-2 – Temporary Access Road. The applicant proposes to construct a temporary access road to the site. This access road shall be an all-weather road designed to allow for fire-truck access during all weather and soil conditions. The road shall be constructed of materials, including culverts and paving, so that it will be safe for use in crossing washes located on the site. In that regard, the road shall be constructed to requirements as outlined in the *California Code of Regulations* Title 19, section 3.05(a). This road will be used by workers, visitors, vendors, and emergency vehicles.

In addition, because this road, which will be gated, crosses the BNSF railroad tracks, certain safety precautions must be put in place, including a flagperson on site to control all traffic coming and going through the gates during construction hours.

Consequently, the applicant shall prepare a safety plan for ensuring that all state and federal safety requirements for railroad crossings are followed, including those required by the Public Utilities Commission as well as the

Federal Railroad Administration. That plan shall be coordinated with those state and federal agencies.

Verification: At least 60 days prior to start of site mobilization, the project owner shall submit the safety plan to the BLM Operations Manager for review and comment, and to the CPM for review and approval.

TRANS-3 – Permission to Construct Permanent Road to Site. The applicant proposes to construct a permanent road to the site. This road is located on private land but will be used by workers and members of the public to access this site. This road also consists of a bridge designed to transverse the BSNF railroad crossing.

This road will be used by workers, delivery persons, and emergency vehicles. Consequently, the applicant shall construct the road according to California State Fire Marshall specifications as outlined in *California Code of Regulations*, Title 19, Section 2.05(a).

In addition, because this road will consist of a bridge transversing BNSF tracks and is located on federal land, the applicant shall before beginning construction of the bridge:

1. Obtain written agreement from BNSF for constructing the bridge. The bridge shall be constructed to all state and federal requirements as required by the California Public Utilities Commission (PUC) and the Federal Railroad Administration (IFRA).
2. File a formal application for the alternation of a railroad crossing with the Public Utilities Commission.
3. Contact the Federal Railroad Administration, which has authority over all railroad crossings, public and private, to ensure compliance with all federal requirements.

After the agreement is obtained from the PUC and BNSF and construction is completed, the applicant shall obtain all necessary and required inspections and approvals from BNSF as well as the PUC and FRA.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall provide the CPM a copy of all documents pertaining to approvals from the PUC, BSNF, and San Bernardino County. Within 30 days after the completion of the road and railroad crossing improvements, the project owner shall provide the CPM with a copy of written approvals from BSNF, PUC, and San Bernardino County as to the adequacy and safety of the road and bridge.

TRANS-4 – Train Safety Plan. A BNSF railroad line transverses the project site. This line is also used by AMTRAK. This railroad line is a potential hazard to workers who will be working in the area as well as visitors and persons making deliveries to the site. Consequently, the applicant shall put into place

measures designed to ensure the safety of workers and other visitors to the site.

These safety measures shall include:

1. A railroad safety plan that includes as a minimum provisions for the following:
 - a. Permanent fencing with gates
 - b. Flagpersons when workers or visitors must cross tracks
 - c. Warning devices necessary to warn workers and visitors of approaching trains
 - d. Adequate signage
2. Coordination with or approval of or both from California Public Utilities Commission (PUC); Federal Railroad Administration (FRA); BNSF; and AMTRAK to ensure that all required safety measures are in place. These measures should be reviewed monthly and updated as necessary.
3. Coordination with AMTRAK and BSNF to determine schedules and posting of schedules in locations suitable to be seen by workers and visitors.

In addition, these safety procedures shall be coordinated with BNSF and AMTRAK; reviewed monthly; and updated as necessary.

Verification: At least 60 days prior to the start of site mobilization, the project owner must provide to the CPM for approval a copy of the safety plan. That plan shall clearly indicate the approval of or coordination with or both of the Public Utilities Commission; Federal Railroad Administration; BSNF; and AMTRAK of the safety plan.

TRANS-5 – Traffic Control Plan. The Calico Solar Project owner shall, in coordination with San Bernardino County, develop and implement a construction traffic control plan prior to earth moving activities. The plan should include provisions for worker on-site parking and the scheduling of delivery of heavy equipment and building materials. In addition, the plan should be coordinated with San Bernardino County to mitigate any potential adverse traffic impacts from other proposed construction projects that may occur during the construction phase of the Calico Solar Project, and adequate access for emergency vehicles to the Calico Solar Project site.

Specifically, the overall traffic control plan shall include the following adequate provisions for:

- Delivery of heavy equipment and building material deliveries, as well as the movement of hazardous materials to the site, including the adjacent lay-down area

- On-site worker parking
- Coordination with the San Bernardino County to mitigate any potential adverse traffic impacts from other proposed construction projects that may occur during the construction phase of the project
- Access for emergency vehicles at the project site

The construction traffic control plan shall also include the following for activities of substantial stature:

- Signing, lighting, and traffic control device placement
- Temporary travel lane closures and potential need for flaggers.

Verification: At least 60 days prior to start of site mobilization, the project owner shall provide to San Bernardino County for review and comment and the Compliance Project Manager (CPM) for review and approval a copy of the construction traffic control plan.

TRANS-6 – Limitations on Vehicle Size and Weight. The project owner shall comply with limitations imposed by Caltrans District 8 office and other relevant jurisdictions including County of San Bernardino on vehicle sizes and weights. In addition, the project owner or its contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for use of roadways.

Verification: At least 30 calendar days prior to the start of construction, the project owner shall provide copies of permits obtained from either the County of San Bernardino and the Caltrans District 8 office to BLM's authorized officer and the CPM. In the Monthly Compliance Reports (MCRs), the project owner shall submit copies of any permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least 6 months after the start of commercial operation.

TRANS-7 – Encroachment into Public Rights of Way. The project owner or its contractor shall comply with Caltrans and other relevant jurisdictions limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and all relevant jurisdictions.

Verification: In the monthly compliance reports (MCRs), the project owner shall submit copies of permits received during the reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least 6 months after the start of commercial operation.

TRANS-8 – Restoration of All Public Roads, Easements, and Rights-of-Way. The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner, as directed by BLM's Authorized

Officer and CPM. Repairs and restoration of access roads may be required at any time during the construction phase of the project to assure safe ingress and egress.

Verification: At least 30 days prior to the start of mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way segments and/or intersections and shall provide BLM's Authorized Officer, the CPM, the affected local jurisdictions and Caltrans (if applicable) with a copy of these images. The project owner shall rebuild, repair and maintain all public roads, easements, rights-of-way in a usable condition throughout the construction phase of the project.

Prior to the start of site mobilization, the project owner shall consult with the County of San Bernardino and Caltrans District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that San Bernardino County and Caltrans consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Within 60 calendar days after completion of construction, the project owner shall meet with BLM's Authorized Officer and the CPM, the County of San Bernardino and Caltrans District 8 to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter signed by the County of Riverside and Caltrans District 8 stating their satisfaction with the repairs to BLM's Authorized Officer and the CPM.

TRANS-9 – Permits/Licenses to Transport Hazardous Materials. The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports, copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous substances.

TRANS-10 – Park-and-Ride Site. Prior to mobilization activities, the applicant shall find or construct a suitable 200-space park-and-ride lot to the west of the project site near Barstow and I-15. This lot will be used by workers from the west who will ordinarily drive directly to the site on I-40. This park-and-ride site shall be used to reduce cumulative impacts from the Abengoa Mojave project; decrease vehicle miles traveled; and improve air quality by resulting in less automobile emissions.

Verification: At least 90 days prior to start of site mobilization, the applicant shall propose a new park-and-ride lot to the County of San Bernardino for review and comment. At least 30 days prior

to site mobilization, the applicant shall notify the County of San Bernardino and the CPM that the park-and-ride lot is ready for use and ready for inspection by the County of San Bernardino.

TRANS-11 – Bus Transportation to Project Site. For workers who stay during the week in local motels in and around Barstow, the applicant shall provide bus service to the project site from those local motels. A route shall be devised to ensure all workers are picked up at central points within walking distance of their motels. This bus transportation shall be coordinated with the Condition of Certification **TRANS-10** to reduce traffic on local roadways.

Verification: At least 90 days prior to start of site mobilization, the applicant shall propose to the County of San Bernardino a bus route for transporting workers for local motels to the project site. This bus transportation plan shall be coordinated with the Condition of Certification **TRANS-10** to minimize the number of bus trips. At least 30 days prior to site mobilization, the applicant shall notify the county of San Bernardino and the CPM that the bus transportation to site has been finalized and ready for implementation.

C.11.14 CONCLUSIONS

1. With the exception of a determination of the impacts of SunCatcher Mirrors on workers and train crews, implementation of proposed conditions of certification, the Calico Solar Project would comply with all applicable LORS related to traffic and transportation. It would result in less than significant impacts to the traffic and transportation system.
2. With implementation of proposed conditions of certification, the Calico Solar Project as proposed would cause no significant direct or cumulative traffic and transportation impacts, and therefore, no environmental justice issues.
3. Presently open BLM routes that traverse the project area would be closed if any of the action alternatives of amendments to the DCDA Plan as required are approved, limiting transportation through the area.
4. Staff is proposing Condition of Certification TRANS-1, which requires the applicant to develop an on-site parking and staging area to ensure that all worker and visitor parking occurs on-site and that all staging occurs in specifically defined areas.
5. Staff is proposing Condition of Certification TRANS-2, which requires that the applicant construct the temporary access road to specifications required by the California State Fire Marshal and develop a safety plan in coordination with BNSF; the Rail Crossings Engineering Section, California Public Utilities Commission, Los Angeles, and the Federal Railroad Administration to ensure all safety procedures are followed to ensure safe crossing of the BNSF tracks by workers, visitors, and delivery persons. These provisions shall provide for a flagperson as well as adequate postings and warnings.
6. Staff is proposing Condition of Certification TRANS-3, which requires the applicant to coordinate the construction of the permanent access to the site with BNSF. The

construction of this road requires the approval of and shall be coordinated with BNSF railroad and shall meet all safety requirements for railroad crossings as required by the Rail Crossings Engineering Section, California Public Utilities Commission, Los Angeles, and the Federal Railroad Administration to ensure that all state and federal requirements pertaining to railroad crossings are met.:

7. Staff is proposing Condition of Certification, TRANS-4, which requires the applicant, in coordination with BNSF, prepare and implement a workers' safety plan for workers near the railroad line owned and operated by BNSF and traversing the project site. The plan must be coordinated with BNSF and require a flagperson, adequate posting, and all necessary provisions to ensure workers' safety.
8. Staff is proposing Condition of Certification TRANS-5 which would require a construction traffic control plan to be developed and implemented prior to earth moving activities.
9. Staff is proposing Condition of Certification TRANS-6 to ensure the applicant complies with all size and weight limitations proposed by San Bernardino County.
10. Staff is proposing Condition of Certification TRANS-7 to ensure applicant complies with Caltrans requirements for encroachment on rights-of-way.
11. Staff is proposing Condition of Certification TRANS-8 to ensure that the applicant restores to its original or better condition all public roads that may be damaged during the construction of the project.
12. Staff is proposing Condition of Certification TRANS-9 to ensure applicant complies with all relevant state, county, and local regulations on the transportation, handling, and disposal of hazardous materials.
13. Staff is proposing Condition of Certification TRANS-10 to require the applicant to provide a park-and-ride lot for workers who travel daily to the project site.
14. To minimize traffic on local roadways and help ensure adequate LOS, staff is proposing Condition of Certification TRANS-11 to require bus service to transport workers staying in hotels and motels in Barstow to the project site.

C.11.15 REFERENCES

Bureau of Land Management California. Renewable Energy.
<<http://www.blm.gov/ca/st/en/prog/energy/solar.html>> Accessed November 2009.

California Energy Commission Power Plant Siting Website <
<http://www.energy.ca.gov/sitingcases/alphabetical.html>> Accessed November 2009.

CSA 2010a – County of San Bernardino Department of Public Works/J. Babico (tn 55052). County of San Bernardino's Comments Regarding Traffic and Transportation for the Proposed Project, dated January 11, 2010. Submitted to CEC/Docket Unit on January 27, 2010.

DOT 2010A – California Department of Transportation/D. Kopulsky (tn 55376). Department of Transportation's Comments on Proposed Project, dated February 9, 2010. Submitted to CEC/Docket Unit on February 12, 2010.

Jackson 2008a – Intervener/P. Jackson (tn 49436). Comments from Patrick Jackson Regarding Access to Public and Private Lands, dated December 13, 2008. Submitted to CEC/Docket Unit on December 17, 2008.

Jackson 2009a – Intervener/P. Jackson (tn 52181). Petition to Intervene by Patrick Jackson, dated June 27, 2009. Submitted to CEC/Docket Unit on June 29, 2009.

Jackson 2009b – Intervener/P. Jackson (tn 52929). Letter from Patrick Jackson Regarding Hector Road, dated August 23, 2009. Submitted to CEC/Docket Unit on August 24, 2009.

Jackson 2009c – Intervener/P. Jackson (tn 53144). Letter to J. Stobaugh and R. Rotte of the Bureau of Land Management Regarding Hector Road, dated September 5, 2009. Submitted to CEC/Docket Unit on September 8, 2009.

Jackson 2009d – Intervener/P. Jackson (tn 53851). Letter to J. Stobaugh and R. Botte of the Bureau of Land Management Regarding Hector Road, dated October 25, 2009. Submitted to CEC/Docket Unit on October 26, 2009.

Jackson 2009e – Intervener/P. Jackson (tn 53849). Patrick Jackson's Status Report #1, dated October 25, 2009. Submitted to CEC/Docket Unit on October 26, 2009.

Jackson 2009f – Intervener/P. Jackson (tn 54518) Patrick Jackson's Status Report #2, dated December 19, 2009. Submitted to CEC/Docket Unit on December 21, 2009.

Jackson 2010a – Intervener/P. Jackson (tn 54906). Patrick Jackson's Status Report #3, dated January 14, 2010. Submitted to CEC/Docket Unit on January 15, 2010.

Jackson 2010b – Intervener/P. Jackson (tn 55399). Patrick Jackson's Status Report #4, dated February 13, 2010. Submitted to CEC/Docket Unit on February 16, 2010.

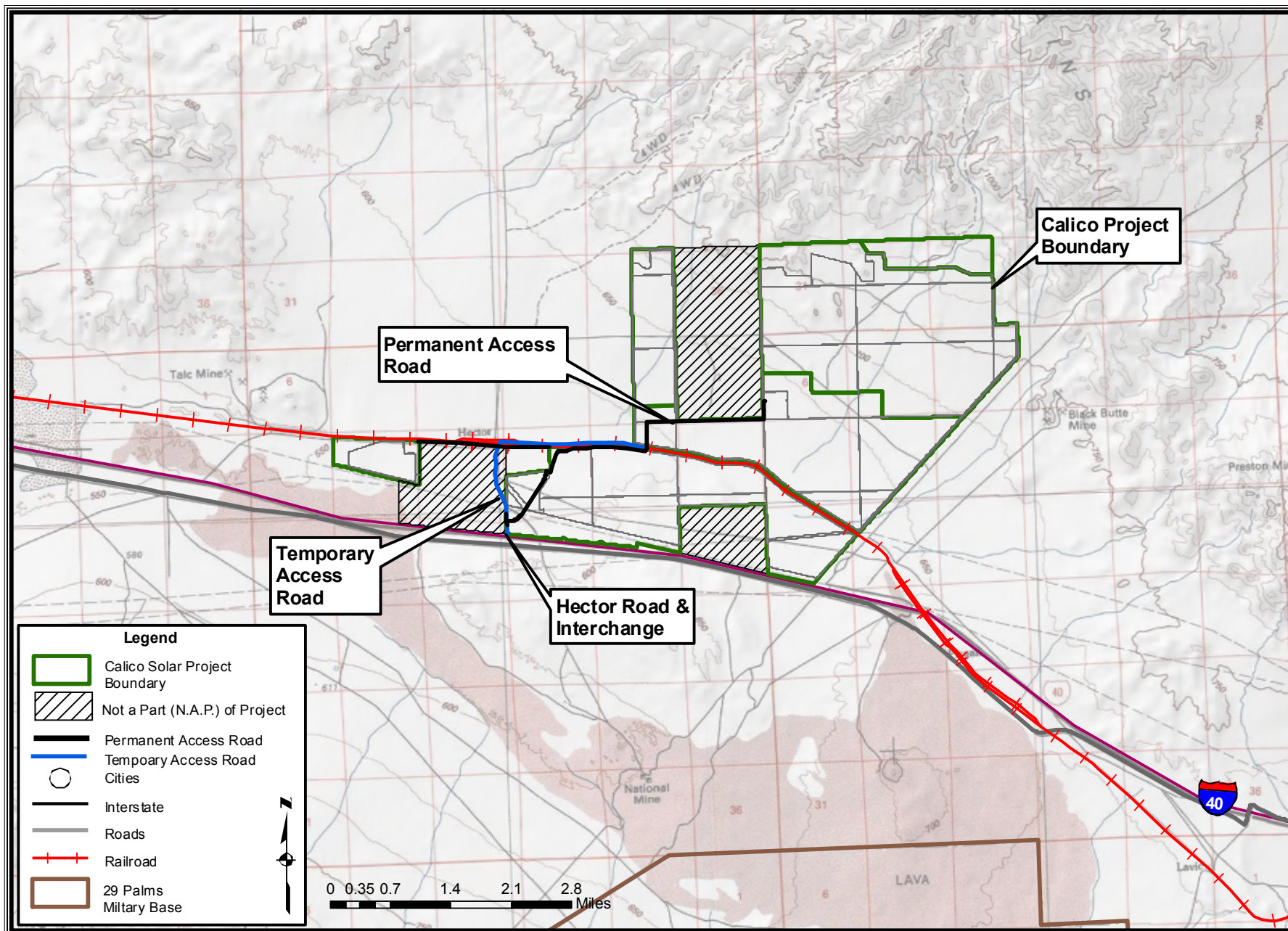
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West-wide Energy Corridor Programmatic EIS Information Center.
<<http://corridoreis.anl.gov/>> Accessed November 2009.

TRAFFIC AND TRANSPORTATION - FIGURE 1
 Calico Solar Project - Local Transportation Network

MARCH 2010

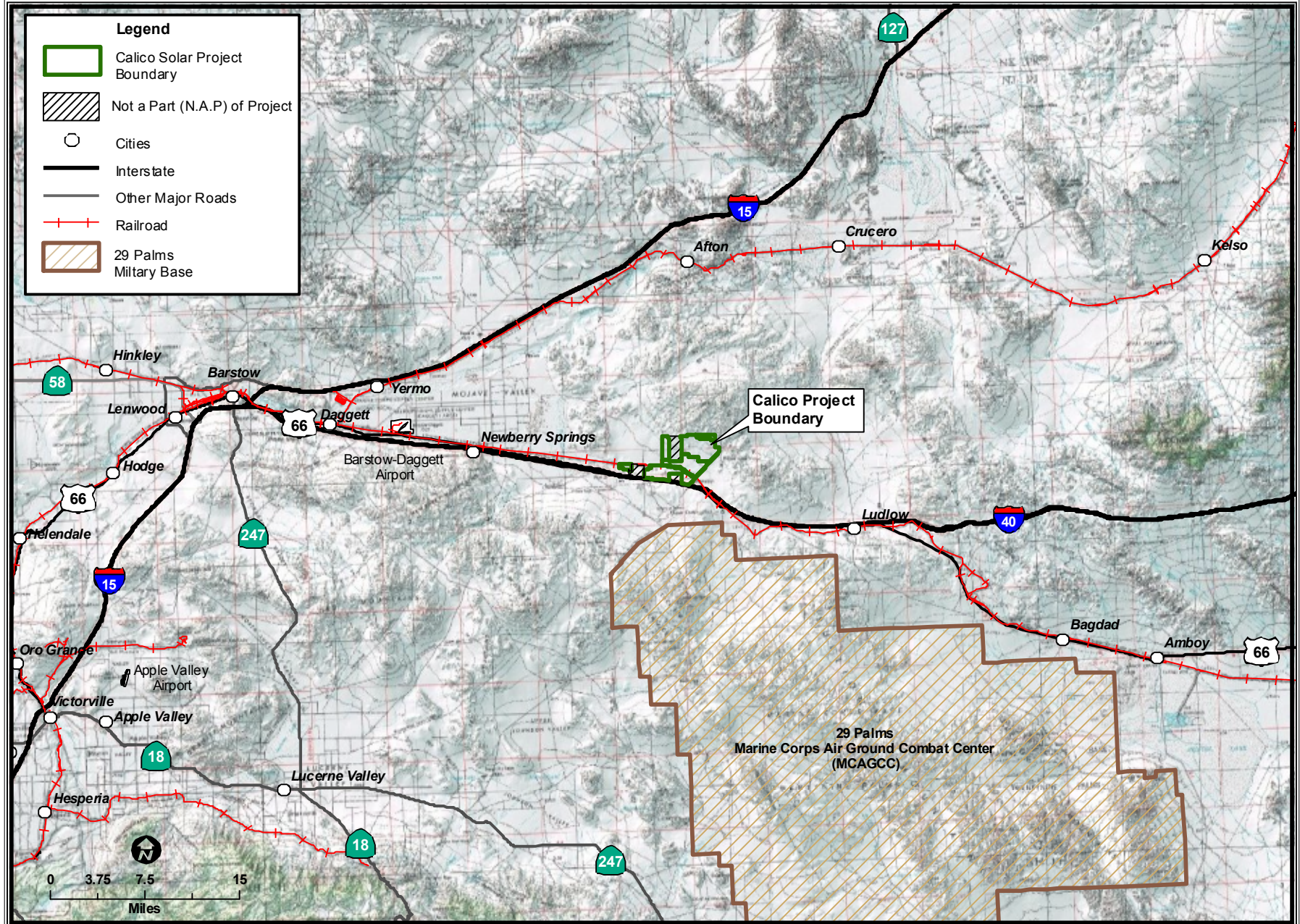
TRAFFIC AND TRANSPORTATION



TRAFFIC AND TRANSPORTATION - FIGURE 2 Calico Solar Project - Regional Transportation Network

MARCH 2010

TRAFFIC AND TRANSPORTATION



U.S. BUREAU OF LAND MANAGEMENT and CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: California Energy Commission - Tele Atlas Data - San Bernardino County

C.12 – TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

C.12.1 SUMMARY OF CONCLUSIONS

The applicant, Calico Solar, LLC, proposes to transmit the power from the two phases of the proposed Calico Solar Project (formerly the Stirling Energy Systems Solar One Project) to Southern California Edison's existing Pisgah Substation from which it would be delivered to the California Independent Operator-controlled power grid. Since the line would be operated within the Southern California Edison service area, it would be constructed, operated, and maintained according to Southern California Edison's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards. Also, the route would traverse undisturbed desert land with no nearby residents thereby eliminating the potential for residential electric and magnetic field exposures. With the four proposed conditions of certification, any safety and nuisance impacts from construction and operation of the proposed line would be less than significant, meaning that no adverse environmental impacts would occur as defined under the California Environmental Quality Act (CEQA) or the National Environmental Policy Act (NEPA).

C.12.2 INTRODUCTION

The purpose of this staff assessment is to assess the proposed Calico Solar Project's transmission line design and operational plan to determine whether its related field and non-field impacts would constitute a significant environmental hazard in the areas around the proposed route. All related health and safety laws, ordinances, regulations, and standards (LORS) are currently aimed at minimizing such hazards. Staff's analysis focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The federal, state, and local laws and policies in the next section apply to the control of the field and nonfield impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements.

C.12.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The potential magnitude of the line impacts of concern in this staff analysis depends on compliance with the listed design-related LORS and industry practices. These LORS and practices have been established to maintain impacts below levels of potential significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

TRANSMISSION LINE SAFETY AND NUISANCE (TLSN) TABLE 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR), "Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
San Bernardino County General Plan, Noise Element	References the county's Ordinance Code for noise limits.
San Bernardino County Noise Ordinance	Establishes performance standards for planned residential or other noise-sensitive land uses.

Applicable LORS	Description
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC "Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California"	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250-1258, "Fire Prevention Standards for Electric Utilities"	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

C.12.4 PROPOSED PROJECT

C.12.4.1 SETTING AND EXISTING CONDITIONS

As discussed by the applicant, Calico Solar, LLC, the proposed Calico Solar Project would be developed in two phases. Phase 1 would have a generating capacity of 275 megawatts (MW) while Phase 2 would have a capacity of 575 MW. The total area required for the two phases would be approximately 8,320 acres of federal land in San Bernardino County currently managed by the Bureau of Land Management (BLM). Phase 1 of the project would require approximately 2,320 acres while Phase 2 would require 5,910 acres. The project site is approximately 37 miles east of Barstow, 17 miles

east of Newberry Springs and 57 miles northeast of Victorville. Each phase of the proposed facility would consist of a solar field and related electric power generating equipment from which the generated power would be transmitted to the Southern California Edison's Pisgah Substation (near the southeastern corner of the site) for delivery to the California Independent Operator (CAISO)-operated power grid. The tie-in line for Phase 1 would be an overhead 2-mile long, single-circuit, 230-kV line extending from the project's on-site substation to SCE's Pisgah Substation (SES 2008a pp.1-3, and 3-30 through 3-33).

The proposed project and related transmission line are in an uninhabited open desert area traversed by several underground and overhead transmission lines. The route of the proposed line would extend over generally uninhabited desert land where the nearest residence is approximately 9,000 feet east of the Pisgah Substation (SES 2008a 5.12-6), meaning that there would not be the type of residential field exposure that has been of health concern in recent years.

C.12.4.2 PROJECT DESCRIPTION

The proposed tie-in line system for the two project phases would consist of the following individual segments:

- A new, single-circuit 230-kV overhead transmission line extending 2 miles from the on-site project switchyard to SCE's Pisgah Substation; and
- The project's on-site 230-kV switchyard from which the conductors would extend to the SCE Pisgah Substation.

The on-site segment of the proposed project line would be located within its own unshared right-of-way as it extends from the on-site substation, crossing over three SCE transmission lines of 230 kV and 500 kV as it extends to the connection point within the Pisgah Substation. The proposed routing scheme was chosen to minimize the length of the required line and to locate the line within existing line corridors to the extent possible. To accommodate the power from Phase 1 and later Phase 2, SCE has proposed expanding and upgrading the 230-kV Pisgah Substation to 500 kV, looping the Eldorado-Lugo 500-kV line into the Pisgah Substation and upgrading 65 miles of the existing Lugo-Pisgah No 2 230 line to 500 kV. Modifications within SCE's El Dorado and Lugo Substations would also be necessary. These project-related line modifications would be under CPUC and BLM jurisdiction and would thus be made according to CPUC guidelines ensuring compliance with existing health and safety LORS (SES 2008a pp. 3-27 through 3-36).

The conductors for the proposed project Phase I line would be aluminum steel-reinforced cables supported on steel towers or steel poles as typical of similar SCE lines. The applicant provided the details of the proposed H-Frame or Lattice-Tower support structures as related to line safety, maintainability, and field reduction efficiency. These support structures would be spaced between 650 feet and 850 feet apart (SES 2008a, page 3-28, and Figures 3.4-39).

C.12.4.3 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Direct Impacts and Mitigation Methods

Aviation Safety

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The requirements in the LORS listed on **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable space and establish the criteria for determining when to notify the FAA about such hazards. These regulations require FAA notification in cases of structures over 200 feet from the ground, or if the structure is less than 200 feet in height but would be located within the restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area extending 20,000 feet from the runway. For airports with runways of 3,200 feet or less, the restricted airspace would be an area that extends 10,000 feet from this runway. For heliports, the restricted space is an area that extends 5,000 feet.

The closest area airports are too far from the proposed project and related facilities pose a collision hazard to utilizing aircraft according to FAA criteria. Furthermore, the maximum height of 110 feet for the proposed line support structures (SES 2008a p. 3-31 and Figure 3.4-39) would be much less than the 200-foot height that triggers the concern over aviation hazard according to FAA requirements.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation and is produced by the physical interactions of line electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas.

The proposed project lines would be built and maintained in keeping with standard SCE practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345 kV and above, and not for 230-kV lines such as the proposed lines. The line's proposed low-corona designs are used for all SCE lines of similar voltage rating to reduce surface-field strengths and the related potential for corona effects. Since the proposed lines would

traverse uninhabited open space, staff does not expect any corona-related radio-frequency interference or related complaints and does not recommend any related condition of certification.

Audible Noise

The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line electric field, the potential for perception can be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV or higher. It is, therefore, not generally expected at significant levels from lines of less than 345 kV as proposed for the Calico Solar Project. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing the fair-weather audible noise from modern transmission lines to be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the low-corona designs are also aimed at minimizing field strengths, staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed line and related facilities, please refer to staff's analysis in the **NOISE AND VIBRATION** section.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

Standard fire prevention and suppression measures for similar SCE lines would be implemented for the proposed project lines (SES 2008a, p. 3-29). The applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Condition of Certification **TLSN-3** is recommended to ensure compliance with important aspects of the fire prevention measures.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

The applicant's stated intention to implement the GO-95-related measures against direct contact with the energized line (SES 2008a, p.3-29) would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). For the proposed project line, the project owner will be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way.

The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices (SES 2008a, p. 3-31). Staff recommends Condition of Certification **TLSN-4** to ensure such grounding for the proposed project.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows, and exposure to them together is generally referred to as *EMF exposure*. The available evidence as evaluated by the CPUC, other regulatory agencies, and staff has not established that such fields pose a significant health hazard to exposed humans. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff therefore considers it appropriate, in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.

- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State's Approach to Regulating Field Exposures

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

The CPUC has recently revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings specified in Decision D.06-1-42 of January 2006, did not point to a need for significant changes to existing field management policies. Since there are no residences in the immediate vicinity of the proposed project line, there would not be the long-term residential EMF exposures mostly responsible for the health concern of recent years. The only project-related EMF exposures of potential significance would be the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the line. These types of exposures are short term and well understood as not significantly related to the health concern.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors, and, in the case of magnetic fields, amount of current in the line.

Since the CPUC currently requires that most new lines in California be designed according to the EMF-reducing guidelines of the electric utility in the service area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project line according to existing SCE field strength-reducing guidelines would constitute compliance with the CPUC requirements for line field management.

Industry's and Applicant's Approach to Reducing Field Exposures

The present focus is on the magnetic field because unlike electric fields, it can penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of the health concern of recent years. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case. As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields while using some common household appliances than from high-voltage lines (National Institute of Environmental Health Services and the U.S. Department of Energy, 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short term, while the exposures from power lines are lower level, but long term. Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar SCE lines, specific field strength-reducing measures would be incorporated into the proposed line's design to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures to be applied include the following:

1. increasing the distance between the conductors and the ground to an optimal level;
2. reducing the spacing between the conductors to an optimal level;
3. minimizing the current in the line; and
4. arranging current flow to maximize the cancellation effects from interacting of conductor fields.

Since the routes of the proposed project lines would have no nearby residences, the long-term residential field exposures at the root of the health concern of recent years would not be a significant concern. The field strengths of most significance in this regard would be as encountered at the edge of the line's right-of-way. These field intensities would depend on the effectiveness of the applied field-reducing measures. The applicant (SES 2008a, p. 3-34 and Appendix I) calculated the maximum electric and magnetic field intensities expected along the proposed route. The maximum electric field strength was calculated as 0.2 kV/m at the edge of the 200-foot right-of-way while the maximum magnetic field strength was calculated as 25 mG at the same location. These field strength values are similar to those of similar SCE lines (as required under current CPUC regulations) but, in the case of the magnetic field, the estimate is much less than the 200 mG currently specified by the few states with regulatory limits. The

requirements in Condition of Certification **TLSN-2** for field strength measurements are intended to validate the applicant's assumed field reduction efficiency.

C.12.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would essentially be a 275 MW solar facility located within the central portion of the proposed 850 MW project. This alternative is analyzed because it could be constructed without upgrading the SCE Lugo-Pisgah transmission line. These alternative's boundaries reflect the revisions to the locations of the transmission line, substation, laydown area, and control facilities as shown in **Alternatives Figure 1**.

C.12.5.1 SETTING AND EXISTING CONDITIONS

As with the proposed project, the Reduced Acreage Alternative would include numerous groups of 60 solar collectors connected by underground electrical cables. It is after aggregation at the project substation that the generated power would be transmitted to SCE's existing 230-kV Pisgah Substation. There would be fewer solar collector groups in this alternative but the system of aggregation and method of power transmission would be the same as the proposed project. Please see the discussion of existing conditions within the potentially affected BLM lands under Section C.12.4.1

C.12.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis focuses on the transmission line required to serve the generation facility, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

As with the proposed project, the power from the proposed Reduced Acreage Alternative would be transmitted to the SCE power grid through the Pisgah Substation using the same 230-kV as proposed; the field impacts on the line would be proportionately smaller. Since the line would be designed and operated according to the applicable SCE guidelines, the magnitude of the field and nonfield impacts of concern in this analysis would be as expected for SCE lines of the same voltage and current-carrying capacity. These impacts would manifest themselves as the noted effects on radio frequency communication, audible noise, hazardous and nuisance shocks, electric and magnetic field levels, fire hazards and aviation safety.

C. 12.5.3 CEQA LEVEL SIGNIFICANCE

Since staff finds the impacts of line operations to be potentially less than significant for the proposed SCE design, staff would expect the design's implementation for the Reduced Acreage Alternative (as required by the four recommended conditions for certification) to result in impacts that would be less than significant.

C.12.6 AVOIDANCE OF DONATED AND ACQUIRED LANDS ALTERNATIVE

The Avoidance of Donated Acquired Lands Alternative would be a facility of approximately 720 MW located within the boundaries of the proposed 850 MW project. This alternative, the related transmission lines, substation laydown and control facilities are shown in **Figure 2** in the **ALTERNATIVES** section.

C.12.6.1 SETTING AND EXISTING CONDITIONS

As with the proposed project, the Avoidance of Donated and Acquired Land Alternative would include numerous groups of 60 solar collectors connected by underground cables. When aggregated at the project substation, the generated power would be transmitted to the SCE Pisgah 230-kV Substation. There would be fewer solar collector groups in this alternative but the system of aggregation and power transmission would be the same as for the proposed project.

The Avoidance of Donated and Acquired Lands Alternative would consist of 28,800 solar collectors occupying the entire footprint of the proposed project but avoiding use of any lands donated to the BLM or acquired by BLM through the Land and Water Conservation Fund program. Like the proposed project, the power from this alternative would be transmitted to the grid through the Pisgah Substation and would require infrastructure similar to that of the proposed 850 MW including water storage tanks, transmission line, and substation. Like the proposed project, this alternative would require the 65-mile upgrade to the Lugo-Pisgah transmission line. The setting is generally the same as that described in Section C.12.4.1.

C.12.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis focuses on the transmission line required to serve the generation facility, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and

- electric and magnetic field (EMF) exposure.

The Avoidance of Donated and Acquired Lands Alternative would use approximately 85% of the solar collectors, provide 85% of the generated power and use approximately 86% of the land (7,050 acres) used by the proposed 850 MW project. It would therefore, require fewer solar collector groups to generate the 275 MW but would require transmission with a line of the same voltage as the proposed Calico Solar Project. Since such a line would (a) be constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards and (b) traverse undisturbed desert land with no nearby residents, its use would eliminate the potential for residential electric and magnetic field exposures as would the proposed project.

C.12.6.3 CEQA LEVEL OF SIGNIFICANCE

With the four conditions of certification recommended for the proposed project, any safety and nuisance impacts from the line for the Avoidance of Donated and Acquired Lands Alternative would be less than significant.

C.12.7 NO PROJECT/NO ACTION ALTERNATIVE

There are three No Project/No Action Alternatives evaluated as follows:

NO PROJECT/NO ACTION ALTERNATIVE #1

No Action on the Calico Solar Project Application and on CDCA Land Use Plan Amendment

In the No Project / No Action Alternative, the proposed action would not be undertaken. The BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality [43 U.S.C. 1781 (b)] in conformance with applicable statutes, regulations, policy and land use plan.

The results of the No Project / No Action Alternative would be the following:

- The impacts of the proposed project would not occur.
- The land on which the project is proposed may or may not become available to other uses (including another solar project), depending on BLM's actions with respect to the amendment of the California Desert Conservation Area Plan.
- The benefits of the proposed project in reducing greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no new transmission system construction or upgrades. As a result, no impacts to transmission line safety and nuisance from construction or operation of the proposed project would occur. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

If this project is not approved, renewable projects would likely be developed on other sites in the California Desert or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are large solar and wind projects proposed on BLM land along the Interstate 40 corridor within a few miles of the Calico Solar Project site. In addition, there are currently over 70 applications for solar projects covering over 650,000 acres pending with BLM in California.

NO PROJECT/NO ACTION ALTERNATIVE #2

No Action on Calico Solar Project and Amend the CDCA Land Use Plan to Make the Area Available for Future Solar Development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site would be developed with a different solar technology. As a result, the construction of new transmission lines or upgrades to the existing system would result from the construction and operation of another renewable facility and would likely result in impacts to transmission line safety and nuisance similar to those of the proposed project. As such, this No Project/No Action Alternative could result in impacts to transmission line safety and nuisance similar to the impacts under the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE #3

No Action on the Calico Solar Project Application and Amend the CDCA Land Use Plan to Make the Area Unavailable for Future Solar Development

Under this alternative, the proposed Calico Solar Project would not be approved by the Energy Commission and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended to make the area unavailable for future solar development, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site and no corresponding land disturbance. As a result, the transmission system impacts are not expected to change noticeably from existing conditions and, as such, this No Project/No Action Alternative would not result in impacts to transmission line safety and nuisance. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.12.8 PROJECT-RELATED FUTURE ACTIONS - TRANSMISSION LINE SAFETY AND NUISANCE

This section examines the potential impacts of future transmission line construction, line removal, substation expansion, and other upgrades that may be required by Southern California Edison Company (SCE) as a result of the Calico Solar Project. The SCE upgrades are a reasonably foreseeable event if the Calico Solar Project is approved and constructed as proposed.

The SCE project will be fully evaluated in a future EIR/EIS prepared by the BLM and the California Public Utilities Commission. Because no application has yet been submitted and the SCE project is still in the planning stages, the level of impact analysis presented is based on available information. The purpose of this analysis is to inform the Energy Commission and BLM, interested parties, and the general public of the potential environmental and public health effects that may result from other actions related to the Calico Solar Project.

The project components and construction activities associated with these future actions are described in detail in Section B.3 of this Staff Assessment/EIS. This analysis examines the construction and operational impacts of two upgrade scenarios

- The **275 MW Early Interconnection Option** would include upgrades to the existing SCE system that would result in 275 MW of additional latent system capacity. Under the 275 MW Early Interconnection option, Pisgah Substation would be expanded adjacent to the existing substation, one to two new 220 kV structures would be constructed to support the gen-tie from the Calico Solar Project into Pisgah Substation, and new telecommunication facilities would be installed within existing SCE ROWs.
- The **850 MW Full Build-Out Option** would include replacement of a 67-mile 220 kV SCE transmission line with a new 500 kV line, expansion of the Pisgah Substation at a new location and other telecommunication upgrades to allow for additional transmission system capacity to support the operation of the full Calico Solar Project.

C.12.8.1 ENVIRONMENTAL SETTING

The environmental setting described herein incorporates both the 275 MW Early Interconnection and the 850 MW Full Build-Out options. The setting for the 275 MW Early Interconnection upgrades at the Pisgah Substation and along the telecomm

corridors is included within the larger setting for the project area under the 850 MW Full Build-Out option, which also includes the Lugo-Pisgah transmission corridor.

The 275 MW Early Interconnection would consist of construction of approximately one to two new 220 kV structures within SCE's existing 220 kV ROW and/or within the expanded Pisgah Substation fence line to support the gen-tie line coming from the Calico Solar Project to facilitate the 220 kV service drop from the last Calico Solar Project's gen-tie structure into the Pisgah Substation.

The 850 MW Full Build-Out would consist of the construction of a single-circuit 500 kV transmission lines on approximately 57.1 miles of existing ROW and approximately 9.8 miles of new ROW. The existing 220 kV Lugo-Pisgah No. 2 transmission line would be rebuilt with 500 kV single circuit structures. The completed project would result in a new single circuit transmission line built to 500 kV standards on both existing and new ROW from the Pisgah Substation to the Lugo Substation. The upgrades also involves looping the existing 500 kV Eldorado-Lugo single circuit transmission line into the Pisgah Substation. The new 500 kV line would cross over the existing 220 kV Cima-Eldorado No. 1 and No. 2 circuits. All portions of the transmission lines would be designed to CPUC General Order 95 standards.

C.12.8.2 ENVIRONMENTAL IMPACTS

The potential safety and nuisance issues associated with the proposed upgrades include public health effects from EMF exposure, noise, communications interference, aviation, fire, and electric shock hazard. The proposed transmission line would be built to meet specifications by the CPUC General Order 95, SCE, other regulatory agencies, and local governments designed to minimize these potential nuisances and hazards.

Electromagnetic Field. Since the upgraded 500 kV line would be operated at a higher voltage than the existing 220 kV line, the magnitude of the electric field along the line route would increase. The magnetic field may also change, because its intensity depends directly on current levels, however, phasing with the other existing lines in the corridor can actually reduce magnetic fields in some instances. SCE would prepare an Electric and Magnetic Field (EMF) Management Plan as part of its project application to the CPUC that would include changes in EMF levels associated with the upgrades.

There remains a lack of consensus in the scientific community in regard to public health impacts due to EMF at the levels expected from electric power facilities. Since the work would largely be within existing corridors, the upgrade-related increases in EMF intensity would lead to corresponding increases in human exposure to the line's magnetic fields. The nearest residences may be adjacent to the new ROW near the City of Hesperia and Lugo Substation. Line workers would also be exposed to EMF in close proximity to the lines; however, this type of short-term exposure is not significantly related to the present health concern.

There are no federal or State standards limiting human exposure to EMFs from transmission lines or substation facilities in California. For those reasons, EMF is not considered in this analysis as a CEQA/NEPA issue and no impact significance is presented.

Other potential impacts related to electric power facility projects, are both safety and nuisance issues, and include: radio/television/electronic equipment interference; induced currents and shock hazards and potential effects on cardiac pacemakers.

Noise and Communications Interference. Audible noise can be produced by a transmission line and is related to the corona which is a function of line voltage, diameter, and condition. Corona noise is discussed under the **NOISE** section above. Corona can also cause interference with radio and television reception. The project would be designed to minimize corona noise and interference by proper selection of the conductor and associated hardware.

Induced Electric Fields. A conducting object, such as a vehicle or person in an electric field, would experience induced voltages and currents. The strength of the induced current depends on the electric field strength, the size and shape of the conducting object, and the object-to-ground resistance. When a conducting object is isolated from the ground and a grounded person touches the object, a perceptible current or shock may occur as the current flows to the ground. Proper design standards would be implemented to prevent hazardous and nuisance shocks by ensuring that metallic objects on or near the ROW are grounded and that sufficient clearances are provided at roadways and parking lots to keep electric fields at these locations low enough to prevent vehicle short-circuit currents from exceeding 5 milliamperes (mA).

Electric Shock Hazards. Magnetic fields can also induce voltages and currents in conducting objects. Typically, this requires a long metallic object, such as a wire fence or above-ground pipeline that is grounded at only one location. A person who closes an electrical loop by grounding the object at a different location would experience a shock similar to that described above for an ungrounded object. Design standards for managing this issue dictate multiple grounds on fences or pipelines, especially those that are oriented parallel to the transmission line. The SCE upgrades would be constructed in conformance with CPUC GO 95 and Title 8 CCR 2700 requirements. These regulations require sufficient grounding to ensure that hazardous shocks do not occur. Therefore, hazardous shocks are unlikely as a result of project construction, operation, or maintenance. A shield wire would be installed as a feature of the project.

Aviation Safety. Standards for determining obstructions in navigable airspace such as a transmission line are determined by the Federal Aviation Administration (FAA). The upgrades would be built in conformance with FAA requirements to protect aviation safety.

Fire Hazard. The CPUC has established clearances for transmission lines from other man-made and natural structures as well as tree-trimming requirements to avoid fire hazards. SCE would maintain the transmission line corridor and immediate area in accordance with existing regulations and accepted industry practices that would include identification and abatement of any fire hazards.

C.12.8.3 MITIGATION

Because there is no agreement among scientists that exposure to EMF creates any potential health risk, and because CEQA and NEPA do not define or adopt any standards to address the potential health risk impacts of possible exposure to EMFs,

this analysis does not consider magnetic fields in the context of CEQA/NEPA and determination of environmental impacts.

However, recognizing that public concern remains, the CPUC does require, pursuant to GO 131-D, Section X.A, that all applications for a Certificate of Public Convenience and Necessity (CPCN) include a description of the measures taken or proposed by the utility to reduce the potential for exposure to EMFs generated by the project. The CPUC has developed an interim policy that requires utilities, among other things, to identify the no-cost measures undertaken, and the low-cost measures implemented, to reduce the potential EMF impacts. The benchmark established for low-cost measures is 4% of the total budgeted project cost that results in an EMF reduction of at least 15% (as measured at the edge of the utility ROW). Therefore, SCE would need to incorporate specific field-reducing measures into the design of the 500 kV upgraded line prior of its submittal of its CPCN application to the CPUC.

Other public concerns related to electric power facility projects, are both safety and nuisance issues, and include: radio/television/electronic equipment interference; induced currents and shock hazards and potential effects on cardiac pacemakers. SCE is under jurisdiction of the CPUC and the upgraded facilities would be designed and operated according to CPUC General Order 95 in California. CPUC General Order 95 also addresses shock hazards to the public by providing guidelines on minimum clearances to be maintained for practical safeguarding of persons during the installation, operation, or maintenance of overhead transmission lines and their associated equipment.

The Conditions of Certification in the Calico Solar Project Staff Assessment/EIS are intended to ensure compliance with CPUC policy as related to field strengths, perceivable field effects, electric shocks, and human exposure. The line would be operated according to SCE's guidelines, which would be in compliance with the applicable (non-EMF) health and safety LORS.

C.12.8.4 CONCLUSION

The upgraded 500 kV transmission line would be designed, built and operated (largely within the existing ROW) according to SCE's requirements, reflecting compliance with the health and safety (non-EMF) LORS. Therefore, its operation is not expected to pose a significant health and safety hazard to individuals in the area.

C.12.9 CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7).

When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. Since the proposed project's transmission line would be designed, built, and operated according to applicable field-reducing SCE guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for SCE lines of similar voltage and current-carrying capacity. It is this similarity in intensity that constitutes compliance with current CPUC requirements on EMF management. The actual field strengths and contribution levels for the proposed line design would be assessed from the results of the field strength measurements specified in Condition of Certification **TLSN-2**. Therefore, no cumulative impacts related to transmission line safety or nuisance are expected.

C.12.10 COMPLIANCE WITH LORS

As previously noted, current CPUC policy on safe EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in the case of the Calico Solar Project is SCE. Since the proposed project's 230-kV line and related switchyards would be designed according to the respective requirements of the LORS listed in **TLSN Table 1**, and operated and maintained according to current SCE guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis. The actual contribution to the area's field exposure levels would be assessed from results of the field strength measurements required in Condition of Certification **TLSN-2**.

C.12.11 NOTEWORTHY PUBLIC BENEFITS

Since the proposed tie-in line would pose specific, although insignificant risks of the field and nonfield effects of concern in this analysis, its building and operation would not yield any public benefits regarding the effort to minimize any human risks from these impacts.

C.12.12 FACILITY CLOSURE

If the proposed Calico Solar Project were to be closed and decommissioned, and all related structures are removed as described in the **PROJECT DESCRIPTION** section, the minimal electric shocks and fire hazards from the physical presence of this tie-in line would be eliminated. Decommissioning and removal would also eliminate the line's field impacts assessed in this analysis in terms of nuisance shocks, radio-frequency impacts, audible noise, and electric and magnetic field exposure. Since the line would be designed and operated according existing SCE guidelines, these impacts would be as expected for SCE lines of the same voltage and current-carrying capacity and therefore, at levels reflecting compliance with existing health and safety LORS.

C.12.13 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

TLSN-1 The project owner shall construct the proposed transmission line (anywhere along the area identified by the applicant as available for its routing) according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and Southern California Edison's EMF reduction guidelines.

Verification: At least 30 days before starting the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the route for which the applicant provided specific estimates. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than 6 months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-3 The project owner shall ensure that the rights-of-way of the proposed transmission line are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-4 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

C.12.14 CONCLUSIONS

Since staff does not expect the proposed 230-kV transmission tie-in line to pose an aviation hazard according to current FAA criteria, we do not consider it necessary to recommend specific location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current SCE guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's General Order 95. Compliance with Title 14, California Code of Regulations, section 1250, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed Calico Solar Project and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed line's design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed line given the absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for SCE lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since the proposed project's line would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would be routed through an area with no nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable LORS. With implementation of the four recommended conditions of certification, any such impacts would be less than significant.

C.12.15 REFERENCES

EPRI — Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and Above.

National Institute of Environmental Health Services 1998. *An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*. A

Working Group Report. August 1998.

SES (Stirling Systems Solar Three and Solar Six, LLC) 2008a. Application for Certification for the Stirling Energy Systems (SES) Solar One Project, Volumes I and II (tn:49181). Submitted to the California Energy Commission on December, 2008.